

PRELIMINARY DRAINAGE REPORT

FOR

Kilgallon Industrial

South of Poplar Street & East of HWY 395

Hesperia, CA

Prepared for Owner/Developer:

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April 3, 2020

DRC Job No. 20-569

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Introduction

The following hydrology and hydraulic study has been prepared for the development of the industrial property to be situated southeast of Poplar road & State Highway 395 in the City of Hesperia in San Bernardino County, California. The subject site is approximately 7.89 acres and the general location of the site is illustrated on the Vicinity Map, included as Figure 1 in Appendix A of this report.

Hydrology Methodology

For both, the existing and proposed conditions, the peak storm discharge for the drainage sub-areas were calculated using San Bernardino County Hydrology Manual. The Rational Method Equation (1978 April), using AES Software (Ratscx), was used to calculate the 10-year and 100-year storm events. Using Hydraflow Hydrograph software the infiltration basin is designed to attenuate the peak flows and to provide adequate water quality treatment for the site.

Project Description

Existing Site Conditions:

Currently, the existing site is approximately 7.89 acres of undeveloped land. The site is mostly barren with graded pads and has minimal vegetation. Presently, the site drains in the northwest direction towards the corner at HWY 395 & Poplar Street. Refer to the "Existing Hydrology Map" for an illustration of the existing drainage patterns.

The following table summarizes the data and results for the 10-year and 100-year storm event in the existing condition. All calculations can be found in Appendix C of this report.

EXISTING STORM SUMMARY TABEL

AREA	10-YEAR Flowrate	100-YEAR Flowrate
A	0.72 CFS	1.38 CFS
B	2.70 CFS	5.18 CFS
C	6.37 CFS	12.27 CFS

Proposed Site Conditions:

The proposed development will consist of construction of a two-story administration building, an industrial building, and storage building along with paved parking areas, drive aisles, concrete hardscape and curbing, occupying approximately an impervious area of 308,405 SF. Refer to the "Proposed Hydrology Map" for an illustration of the proposed areas. The site runoff from paved areas will sheet flow towards the curb and gutter system where it will be intercepted by catch basins and discharged further into the 96" perforated pipe underground infiltration chambers through storm drain system. The underground system will be located at the north and south side of the administration building. The underground infiltration system will allow adequate infiltration into the surrounding soil and attenuate the peak flows to the pre-developed condition. In the event of a larger storm the

excess flow from the infiltration system will be discharged onto Poplar street from a bubbler system located at the northeast corner of the site.

PROPOSED STORM SUMMARY TABEL PRE-DETENTION

AREA	10-YEAR Flowrate	100-YEAR Flowrate
A	1.12 CFS	2.02 CFS
B	4.11 CFS	7.09 CFS
C	9.56 CFS	16.22 CFS

The difference in peak flow rate of pre-developed and post developed condition for 10 and 100-yr storm events are primarily due to increase in impervious area which is approximately 90% in the developed condition. The excess runoff will be attenuated using the infiltration basin system. Below is the hydrology summary table of entire site for post-developed condition after being routed through our detention systems:

PROPOSED STORM SUMMARY TABLE POST DETENTION

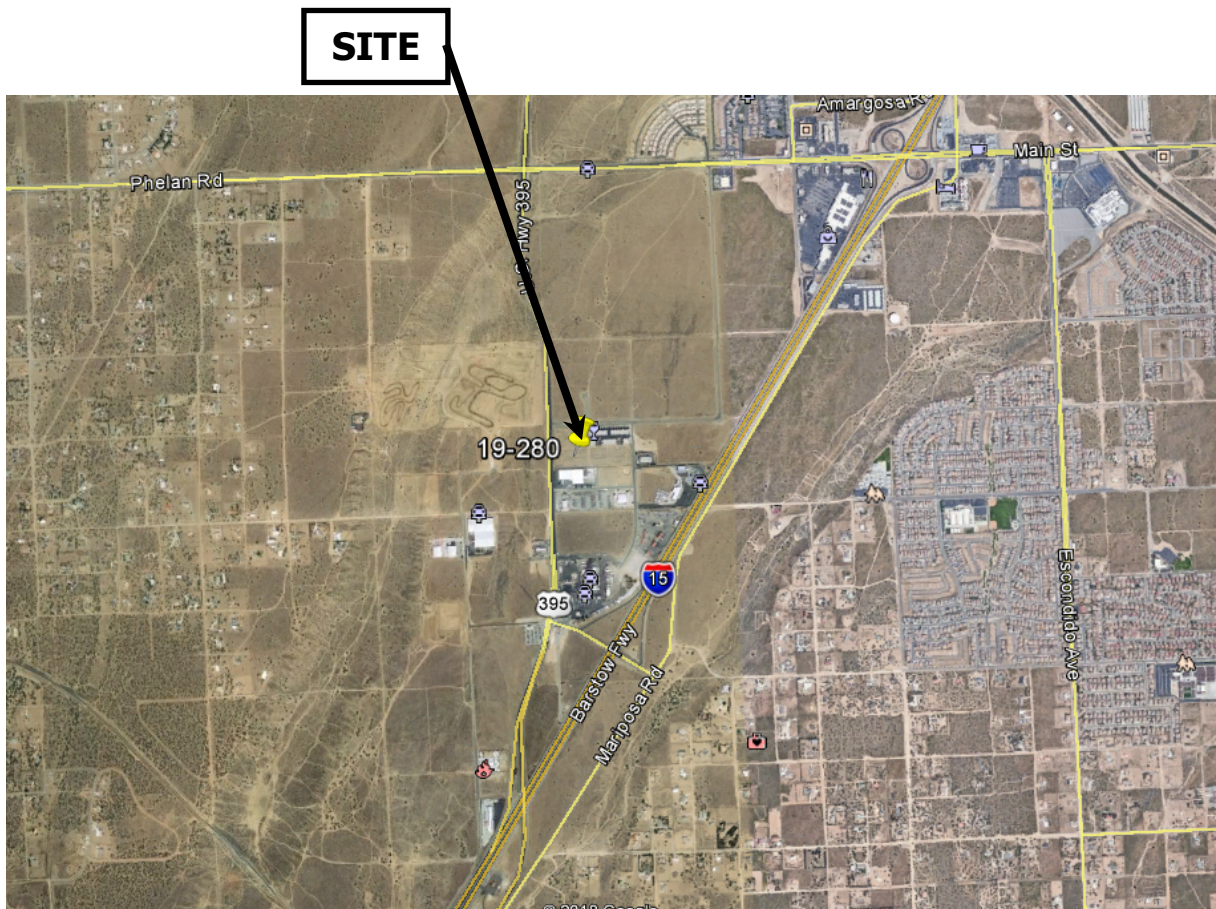
AREA	10-YEAR Flowrate	100-YEAR Flowrate
A	0.56 CFS	1.17 CFS
B	2.70 CFS	4.37 CFS
C	6.30 CFS	8.79 CFS

Conclusion

The proposed underground detention/infiltration system will be sized reduce the proposed 100-year storm flow rate to below existing 100-year peak flowrate as well as the infiltrate WQMP treatment volume. Proposed flows will discharge through curb face along Poplar Street at or beneath existing flow rates for our site. Due to this our site will not pose any down stream flood dangers to any down stream drainage facilities or propoerty.

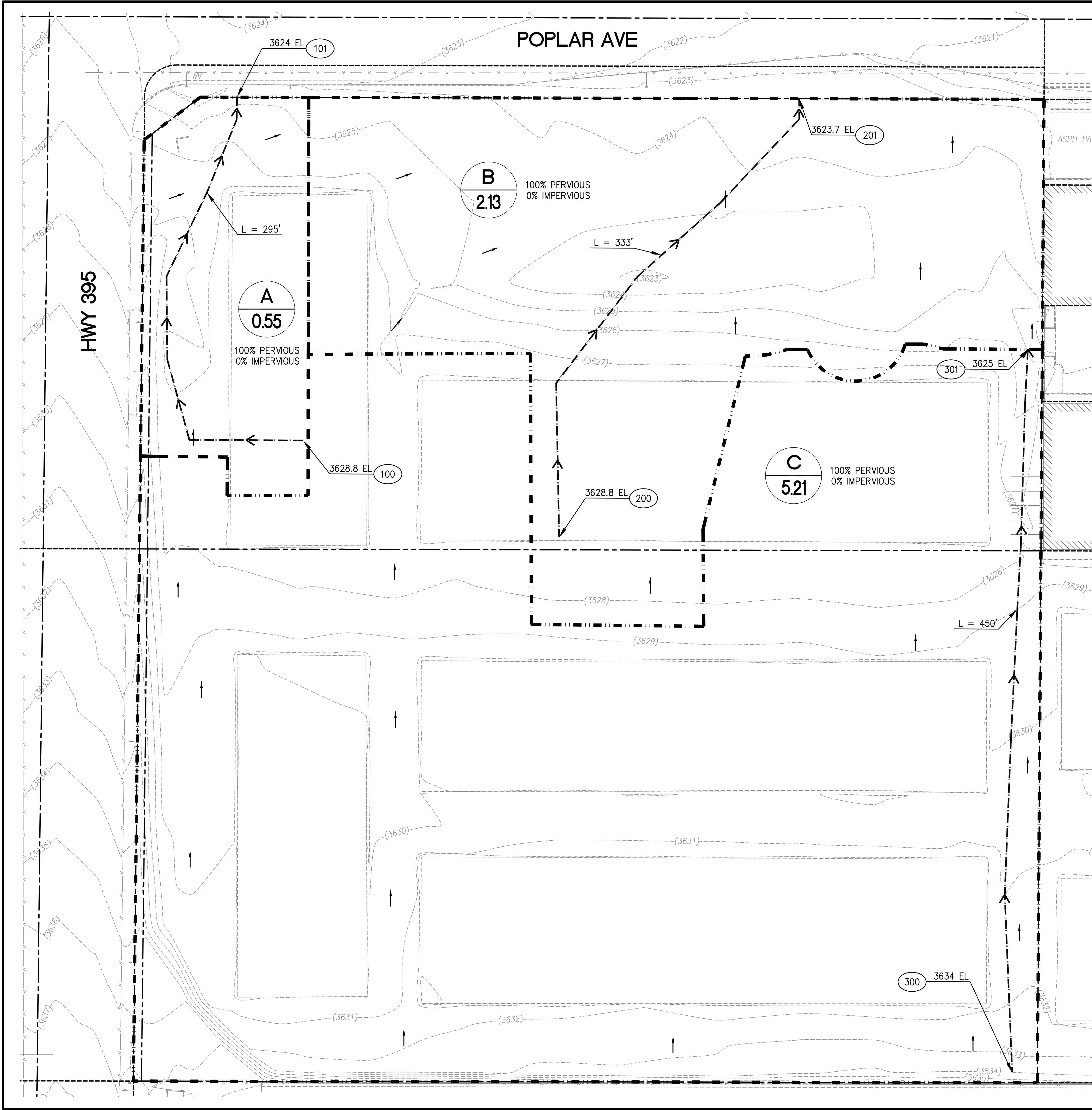
APPENDIX A

Vicinity Map



APPENDIX B

Existing Hydrology Map
Proposed Hydrology Map



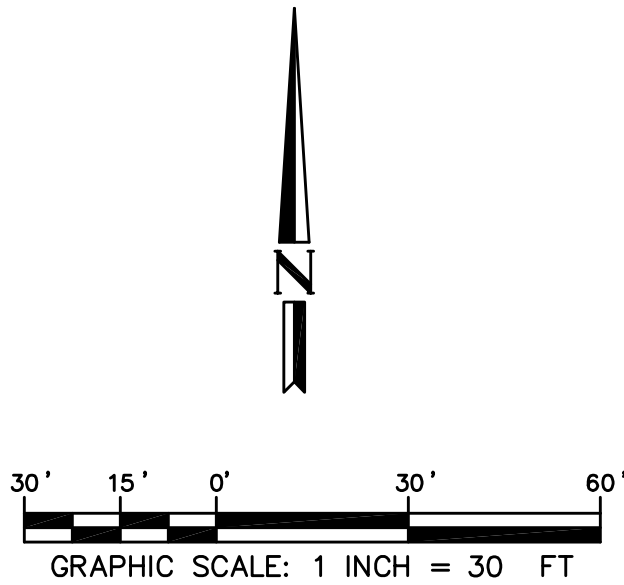
LEGEND:

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- >->-> DRAINAGE FLOW PATH

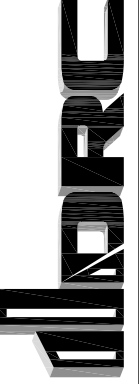
TOTAL DISTURBED
AREA = 7.89 AC

OWNER & EMERGENCY CONTACT:

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NO.	REVISION:	DATE:

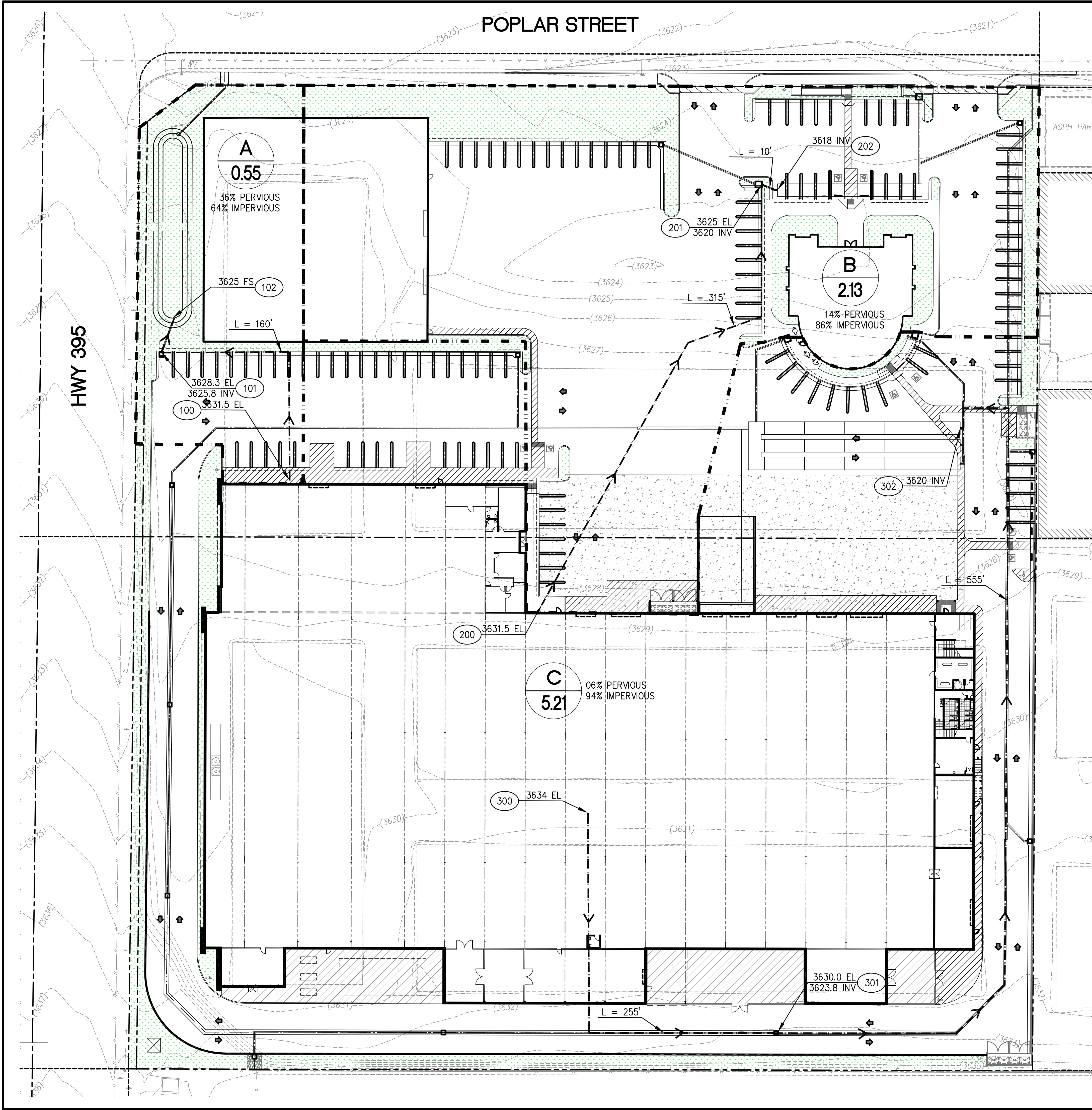
PROJECT:

**Kilgallon Industrial
HWY 395 & POPLAR ST
HESPERIA, CA**

DRAWING NAME:

EXISTING HYDROLOGY MAP

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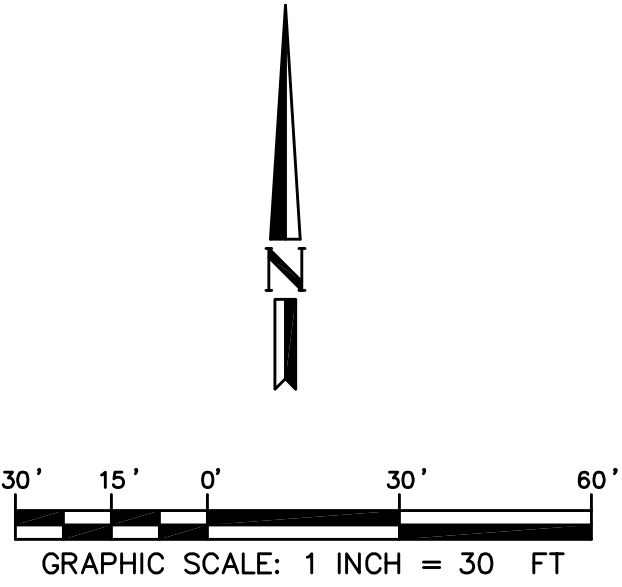
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AS SHOWN

FILENAME: M:\2019\19-280 Orma Industrial Hwy 395\HW\19280_hmp.dwg; LAST SAVED ON: Apr 02 2020 5:50pm PLOTTED BY: MATTHEW, ON: Apr 03 2020 9:33am; CPG: 10

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NOAA Atlas 14, Volume 6, Version 2
Location name: Hesperia, California, USA*
Latitude: 34.4152°, Longitude: -117.3982°
Elevation: 3631.04 ft**
 * source: ESRI Maps
 ** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic,
 Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel
 Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps_&_aerials](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.088 (0.073-0.107)	0.125 (0.103-0.152)	0.173 (0.143-0.212)	0.213 (0.175-0.264)	0.269 (0.212-0.343)	0.312 (0.241-0.407)	0.356 (0.269-0.476)	0.403 (0.296-0.554)	0.467 (0.329-0.669)	0.517 (0.352-0.768)
10-min	0.126 (0.104-0.154)	0.179 (0.148-0.218)	0.248 (0.205-0.304)	0.306 (0.250-0.378)	0.385 (0.305-0.492)	0.447 (0.346-0.583)	0.511 (0.386-0.683)	0.577 (0.424-0.794)	0.669 (0.471-0.959)	0.741 (0.505-1.10)
15-min	0.152 (0.126-0.186)	0.216 (0.179-0.264)	0.300 (0.248-0.368)	0.370 (0.302-0.457)	0.466 (0.368-0.595)	0.541 (0.419-0.705)	0.618 (0.467-0.826)	0.698 (0.513-0.960)	0.809 (0.570-1.16)	0.897 (0.610-1.33)
30-min	0.230 (0.190-0.280)	0.326 (0.269-0.398)	0.453 (0.374-0.555)	0.558 (0.456-0.689)	0.703 (0.556-0.897)	0.815 (0.631-1.06)	0.932 (0.704-1.25)	1.05 (0.773-1.45)	1.22 (0.860-1.75)	1.35 (0.921-2.01)
60-min	0.326 (0.270-0.398)	0.463 (0.383-0.566)	0.644 (0.531-0.789)	0.793 (0.648-0.979)	0.998 (0.789-1.27)	1.16 (0.897-1.51)	1.32 (1.00-1.77)	1.50 (1.10-2.06)	1.73 (1.22-2.49)	1.92 (1.31-2.85)
2-hr	0.480 (0.397-0.585)	0.651 (0.538-0.795)	0.882 (0.727-1.08)	1.08 (0.879-1.33)	1.35 (1.07-1.72)	1.56 (1.21-2.04)	1.79 (1.35-2.39)	2.03 (1.49-2.79)	2.36 (1.66-3.38)	2.63 (1.79-3.90)
3-hr	0.606 (0.501-0.739)	0.810 (0.669-0.989)	1.09 (0.896-1.33)	1.32 (1.08-1.63)	1.65 (1.31-2.11)	1.92 (1.48-2.50)	2.20 (1.66-2.94)	2.49 (1.83-3.43)	2.92 (2.05-4.18)	3.26 (2.22-4.84)
6-hr	0.864 (0.715-1.06)	1.15 (0.947-1.40)	1.53 (1.26-1.87)	1.86 (1.52-2.30)	2.33 (1.84-2.97)	2.71 (2.09-3.53)	3.11 (2.35-4.16)	3.54 (2.60-4.87)	4.17 (2.94-5.97)	4.68 (3.19-6.95)
12-hr	1.13 (0.937-1.38)	1.54 (1.27-1.88)	2.09 (1.73-2.56)	2.56 (2.10-3.17)	3.24 (2.56-4.14)	3.78 (2.93-4.94)	4.36 (3.30-5.83)	4.99 (3.67-6.86)	5.89 (4.15-8.44)	6.63 (4.51-9.84)
24-hr	1.54 (1.36-1.77)	2.15 (1.90-2.48)	2.99 (2.64-3.46)	3.71 (3.25-4.32)	4.72 (4.00-5.69)	5.55 (4.60-6.82)	6.42 (5.20-8.09)	7.36 (5.80-9.53)	8.71 (6.58-11.8)	9.81 (7.17-13.7)
2-day	1.78 (1.58-2.05)	2.49 (2.21-2.87)	3.48 (3.08-4.03)	4.33 (3.80-5.05)	5.56 (4.71-6.70)	6.57 (5.45-8.07)	7.64 (6.19-9.63)	8.81 (6.94-11.4)	10.5 (7.94-14.2)	11.9 (8.70-16.6)
3-day	1.91 (1.69-2.20)	2.67 (2.37-3.08)	3.74 (3.30-4.32)	4.66 (4.09-5.44)	6.01 (5.09-7.24)	7.12 (5.91-8.75)	8.31 (6.73-10.5)	9.61 (7.57-12.5)	11.5 (8.70-15.5)	13.1 (9.57-18.3)
4-day	2.06 (1.82-2.37)	2.88 (2.55-3.33)	4.04 (3.56-4.67)	5.04 (4.41-5.87)	6.49 (5.50-7.82)	7.70 (6.39-9.47)	9.00 (7.29-11.3)	10.4 (8.21-13.5)	12.5 (9.45-16.9)	14.2 (10.4-19.9)
7-day	2.31 (2.05-2.66)	3.22 (2.85-3.71)	4.48 (3.96-5.18)	5.58 (4.88-6.50)	7.17 (6.08-8.63)	8.48 (7.04-10.4)	9.90 (8.02-12.5)	11.5 (9.02-14.8)	13.7 (10.4-18.5)	15.6 (11.4-21.8)
10-day	2.47 (2.19-2.85)	3.43 (3.04-3.96)	4.77 (4.21-5.51)	5.92 (5.18-6.90)	7.59 (6.43-9.14)	8.97 (7.44-11.0)	10.5 (8.47-13.2)	12.1 (9.52-15.6)	14.4 (10.9-19.5)	16.4 (12.0-22.9)
20-day	2.97 (2.63-3.41)	4.10 (3.63-4.73)	5.68 (5.01-6.56)	7.04 (6.16-8.20)	9.00 (7.62-10.8)	10.6 (8.81-13.0)	12.4 (10.0-15.6)	14.3 (11.2-18.5)	17.0 (12.9-23.0)	19.4 (14.2-27.1)
30-day	3.50 (3.10-4.03)	4.82 (4.26-5.55)	6.63 (5.86-7.66)	8.20 (7.18-9.55)	10.5 (8.86-12.6)	12.3 (10.2-15.1)	14.3 (11.6-18.1)	16.5 (13.0-21.4)	19.8 (15.0-26.7)	22.5 (16.4-31.4)
45-day	4.18 (3.70-4.81)	5.67 (5.02-6.54)	7.74 (6.83-8.94)	9.52 (8.33-11.1)	12.1 (10.2-14.6)	14.2 (11.8-17.5)	16.5 (13.4-20.8)	19.0 (15.0-24.7)	22.8 (17.2-30.7)	25.9 (18.9-36.2)
60-day	4.77 (4.23-5.49)	6.38 (5.65-7.35)	8.59 (7.59-9.93)	10.5 (9.20-12.2)	13.3 (11.2-16.0)	15.5 (12.9-19.1)	18.0 (14.6-22.7)	20.8 (16.4-26.9)	24.9 (18.8-33.6)	28.3 (20.7-39.6)

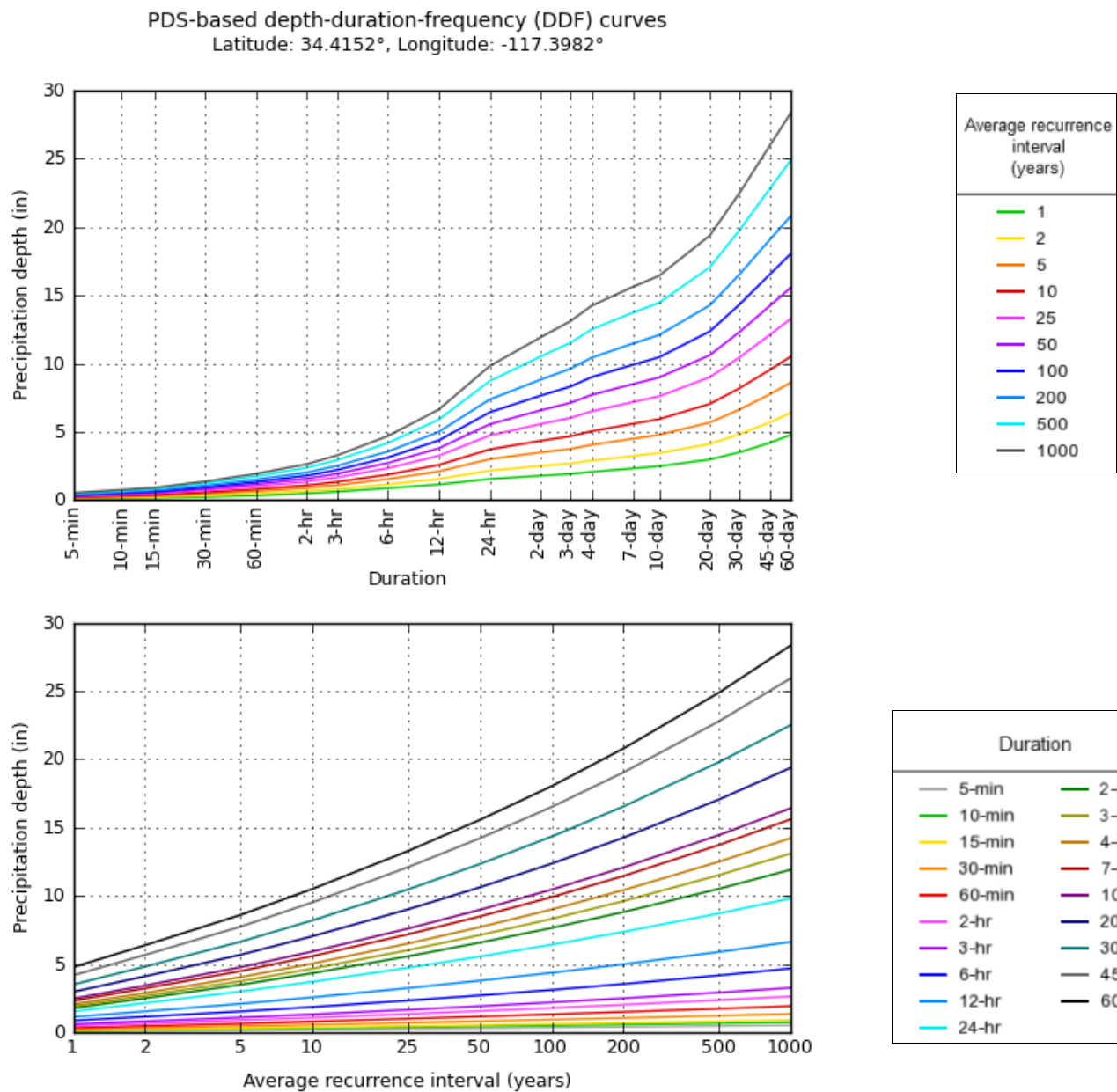
¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical



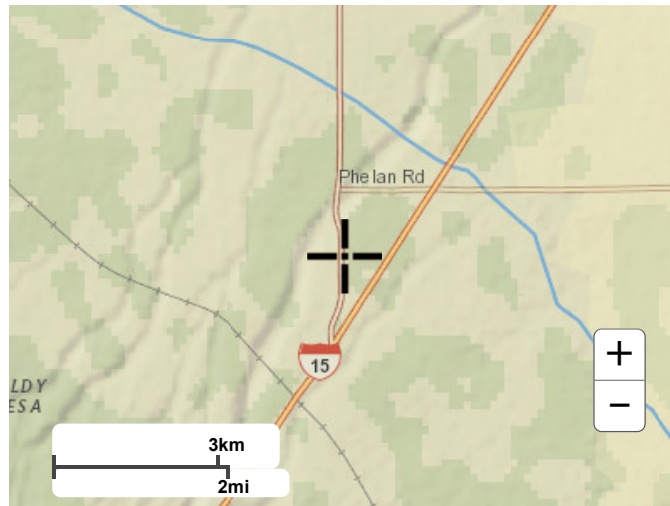
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Maps & aerials

Small scale terrain

**Large scale terrain****Large scale map****Large scale aerial**

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[National Water Center](#)
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Questions?: HDSC.Questions@noaa.gov

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Location name: Hesperia, California, USA*
Latitude: 34.4152°, Longitude: -117.3982°
Elevation: 3631.04 ft**
* source: ESRI Maps
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NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps_&_aerials](#)

PF tabular

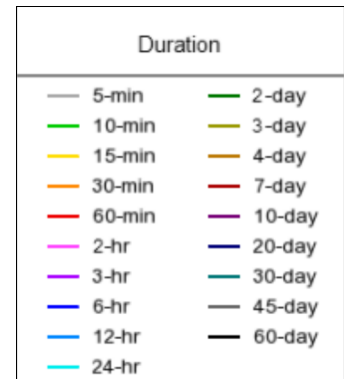
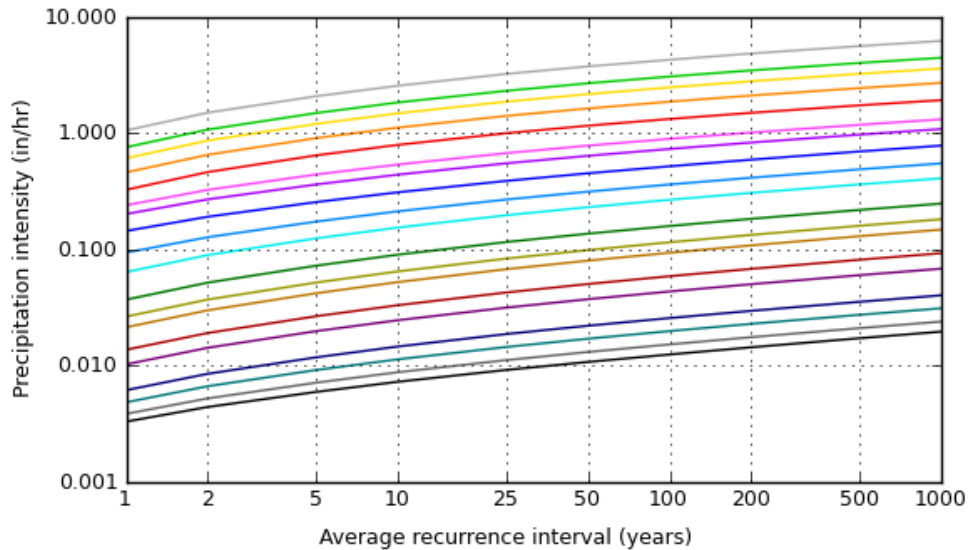
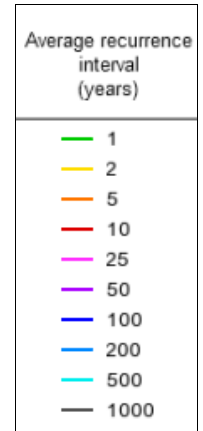
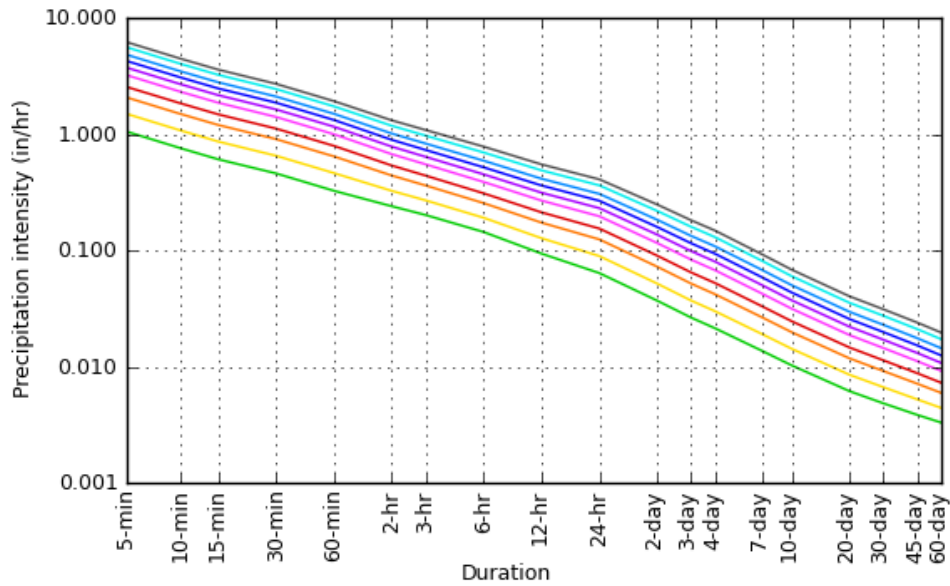
PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	1.06 (0.876-1.28)	1.50 (1.24-1.82)	2.08 (1.72-2.54)	2.56 (2.10-3.17)	3.23 (2.54-4.12)	3.74 (2.89-4.88)	4.27 (3.23-5.71)	4.84 (3.55-6.65)	5.60 (3.95-8.03)	6.20 (4.22-9.22)
10-min	0.756 (0.624-0.924)	1.07 (0.888-1.31)	1.49 (1.23-1.82)	1.84 (1.50-2.27)	2.31 (1.83-2.95)	2.68 (2.08-3.50)	3.07 (2.32-4.10)	3.46 (2.54-4.76)	4.01 (2.83-5.75)	4.45 (3.03-6.61)
15-min	0.608 (0.504-0.744)	0.864 (0.716-1.06)	1.20 (0.992-1.47)	1.48 (1.21-1.83)	1.86 (1.47-2.38)	2.16 (1.68-2.82)	2.47 (1.87-3.30)	2.79 (2.05-3.84)	3.24 (2.28-4.64)	3.59 (2.44-5.32)
30-min	0.460 (0.380-0.560)	0.652 (0.538-0.796)	0.906 (0.748-1.11)	1.12 (0.912-1.38)	1.41 (1.11-1.79)	1.63 (1.26-2.13)	1.86 (1.41-2.49)	2.11 (1.55-2.90)	2.44 (1.72-3.50)	2.71 (1.84-4.02)
60-min	0.326 (0.270-0.398)	0.463 (0.383-0.566)	0.644 (0.531-0.789)	0.793 (0.648-0.979)	0.998 (0.789-1.27)	1.16 (0.897-1.51)	1.32 (1.00-1.77)	1.50 (1.10-2.06)	1.73 (1.22-2.49)	1.92 (1.31-2.85)
2-hr	0.240 (0.198-0.292)	0.326 (0.269-0.398)	0.441 (0.364-0.540)	0.538 (0.440-0.664)	0.673 (0.532-0.860)	0.781 (0.604-1.02)	0.894 (0.675-1.19)	1.01 (0.744-1.39)	1.18 (0.831-1.69)	1.31 (0.894-1.95)
3-hr	0.202 (0.167-0.246)	0.270 (0.223-0.329)	0.362 (0.298-0.444)	0.440 (0.360-0.543)	0.550 (0.435-0.703)	0.638 (0.494-0.832)	0.731 (0.552-0.978)	0.831 (0.610-1.14)	0.971 (0.684-1.39)	1.09 (0.739-1.61)
6-hr	0.144 (0.119-0.176)	0.191 (0.158-0.234)	0.256 (0.211-0.313)	0.310 (0.254-0.383)	0.388 (0.307-0.496)	0.452 (0.350-0.589)	0.519 (0.392-0.694)	0.592 (0.435-0.814)	0.696 (0.490-0.998)	0.782 (0.532-1.16)
12-hr	0.094 (0.078-0.115)	0.128 (0.105-0.156)	0.174 (0.143-0.213)	0.213 (0.174-0.263)	0.269 (0.213-0.343)	0.314 (0.243-0.410)	0.362 (0.274-0.484)	0.414 (0.304-0.569)	0.489 (0.344-0.701)	0.550 (0.374-0.816)
24-hr	0.064 (0.057-0.074)	0.090 (0.079-0.103)	0.125 (0.110-0.144)	0.154 (0.135-0.180)	0.197 (0.167-0.237)	0.231 (0.192-0.284)	0.268 (0.217-0.337)	0.307 (0.242-0.397)	0.363 (0.274-0.490)	0.409 (0.299-0.571)
2-day	0.037 (0.033-0.043)	0.052 (0.046-0.060)	0.073 (0.064-0.084)	0.090 (0.079-0.105)	0.116 (0.098-0.140)	0.137 (0.114-0.168)	0.159 (0.129-0.201)	0.184 (0.145-0.238)	0.219 (0.165-0.295)	0.248 (0.181-0.347)
3-day	0.027 (0.023-0.031)	0.037 (0.033-0.043)	0.052 (0.046-0.060)	0.065 (0.057-0.075)	0.083 (0.071-0.101)	0.099 (0.082-0.122)	0.115 (0.093-0.145)	0.134 (0.105-0.173)	0.160 (0.121-0.216)	0.182 (0.133-0.254)
4-day	0.021 (0.019-0.025)	0.030 (0.027-0.035)	0.042 (0.037-0.049)	0.052 (0.046-0.061)	0.068 (0.057-0.081)	0.080 (0.067-0.099)	0.094 (0.076-0.118)	0.109 (0.086-0.141)	0.130 (0.098-0.176)	0.148 (0.108-0.207)
7-day	0.014 (0.012-0.016)	0.019 (0.017-0.022)	0.027 (0.024-0.031)	0.033 (0.029-0.039)	0.043 (0.036-0.051)	0.050 (0.042-0.062)	0.059 (0.048-0.074)	0.068 (0.054-0.088)	0.082 (0.062-0.110)	0.093 (0.068-0.130)
10-day	0.010 (0.009-0.012)	0.014 (0.013-0.016)	0.020 (0.018-0.023)	0.025 (0.022-0.029)	0.032 (0.027-0.038)	0.037 (0.031-0.046)	0.044 (0.035-0.055)	0.050 (0.040-0.065)	0.060 (0.045-0.081)	0.068 (0.050-0.096)
20-day	0.006 (0.005-0.007)	0.009 (0.008-0.010)	0.012 (0.010-0.014)	0.015 (0.013-0.017)	0.019 (0.016-0.023)	0.022 (0.018-0.027)	0.026 (0.021-0.032)	0.030 (0.023-0.038)	0.036 (0.027-0.048)	0.040 (0.029-0.056)
30-day	0.005 (0.004-0.006)	0.007 (0.006-0.008)	0.009 (0.008-0.011)	0.011 (0.010-0.013)	0.015 (0.012-0.017)	0.017 (0.014-0.021)	0.020 (0.016-0.025)	0.023 (0.018-0.030)	0.027 (0.021-0.037)	0.031 (0.023-0.044)
45-day	0.004 (0.003-0.004)	0.005 (0.005-0.006)	0.007 (0.006-0.008)	0.009 (0.008-0.010)	0.011 (0.009-0.013)	0.013 (0.011-0.016)	0.015 (0.012-0.019)	0.018 (0.014-0.023)	0.021 (0.016-0.028)	0.024 (0.018-0.034)
60-day	0.003 (0.003-0.004)	0.004 (0.004-0.005)	0.006 (0.005-0.007)	0.007 (0.006-0.008)	0.009 (0.008-0.011)	0.011 (0.009-0.013)	0.013 (0.010-0.016)	0.014 (0.011-0.019)	0.017 (0.013-0.023)	0.020 (0.014-0.027)
¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.										

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PF graphical

PDS-based intensity-duration-frequency (IDF) curves

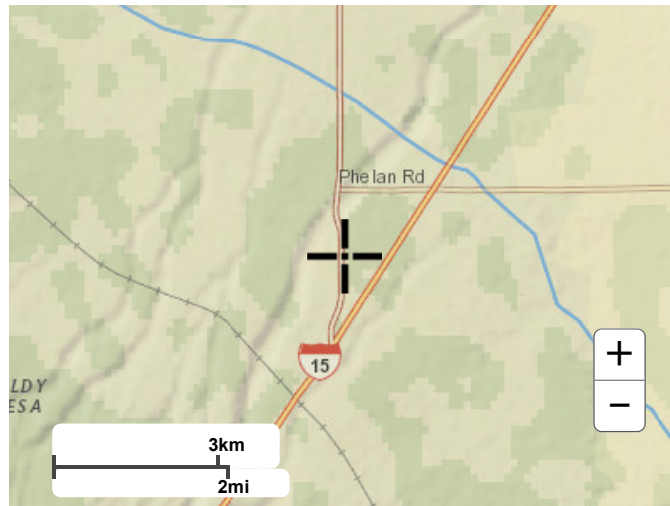
Latitude: 34.4152°, Longitude: -117.3982°



NOAA Atlas 14, Volume 6, Version 2

Created (GMT): Tue Mar 31 17:16:28 2020

[Back to Top](#)**Maps & aerials****Small scale terrain**



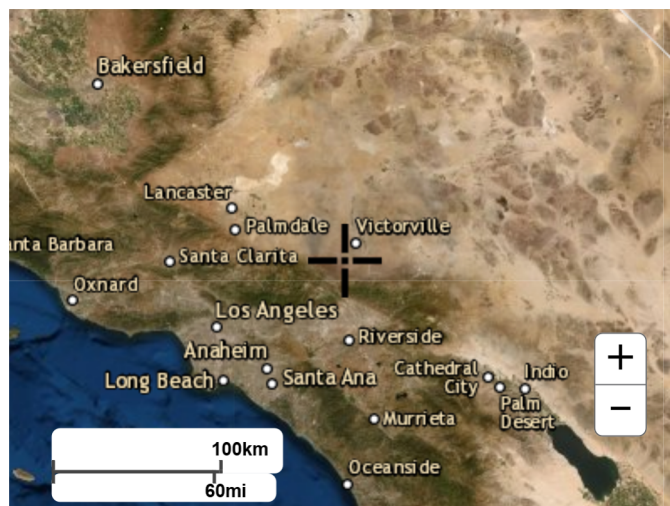
Large scale terrain



Large scale map



Large scale aerial

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[National Weather Service](#)
[National Water Center](#)
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

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APPENDIX C

Existing 10-year & 100-Year Hydrology Calculation
Proposed 10-year & 100-Year Hydrology Calculation
Existing 10-year & 100-Year Hydrograph
Proposed 10-year & 100-Year Hydrograph

RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
(c) Copyright 1983-2015 Advanced Engineering Software (aes)
Ver. 22.0 Release Date: 07/01/2015 License ID 1510

Analysis prepared by:

DRC Engineering, Inc.
160 South Old Springs Road, Suite 210
Anaheim, CA 92808
714-685-6860

***** DESCRIPTION OF STUDY *****
* KILGALLON INDUSTRIAL *
* EXISTING SITE ANALYSIS *
* 10-YEAR STORM EVENT *

FILE NAME: 20569E10.DAT
TIME/DATE OF STUDY: 10:33 03/31/2020

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 10.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 6.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
USER-DEFINED TABLED RAINFALL USED

NUMBER OF [TIME,INTENSITY] DATA PAIRS = 4
1) 5.00; 2.560
2) 30.00; 1.120
3) 60.00; 0.793
4) 360.00; 0.310

ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD

USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

1. Relative Flow-Depth = 0.00 FEET
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
2. (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)

*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

+-----+
| AREA A |
| EXISTING 10-YEAR STORM EVENT |
| KILGALLON INDUSTRIAL |
+-----+

FLOW PROCESS FROM NODE 100.00 TO NODE 101.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<

>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH (FEET) = 295.00
ELEVATION DATA: UPSTREAM (FEET) = 3628.80 DOWNSTREAM (FEET) = 3624.00

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 11.636

* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 2.178

SUBAREA T_c AND LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
-------------------------------	-------------------	-----------------	--------------------	--------------------	-----------	-----------------

NATURAL POOR COVER

"BARREN"	B	0.55	0.27	1.000	86	11.64
----------	---	------	------	-------	----	-------

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.27

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 1.000

SUBAREA RUNOFF (CFS) = 0.94

TOTAL AREA (ACRES) = 0.55 PEAK FLOW RATE (CFS) = 0.94

```
+-----+
| AREA B                                     |
| 10-YEAR STORM EVENT                       |
| KILGALLON INDUSTRIAL                     |
+-----+
```

FLOW PROCESS FROM NODE 200.00 TO NODE 201.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<

>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH (FEET) = 333.00

ELEVATION DATA: UPSTREAM (FEET) = 3628.80 DOWNSTREAM (FEET) = 3623.70

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 12.363

* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 2.136

SUBAREA T_c AND LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
-------------------------------	-------------------	-----------------	--------------------	--------------------	-----------	-----------------

NATURAL POOR COVER

"BARREN"	B	2.13	0.27	1.000	86	12.36
----------	---	------	------	-------	----	-------

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.27

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 1.000

SUBAREA RUNOFF (CFS) = 3.57

TOTAL AREA (ACRES) = 2.13 PEAK FLOW RATE (CFS) = 3.57

```
+-----+
| AREA C                                     |
| 10-YEAR STORM EVENT                       |
| KILGALLON INDUSTRIAL                     |
+-----+
```

FLOW PROCESS FROM NODE 300.00 TO NODE 301.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<

>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH (FEET) = 450.00

ELEVATION DATA: UPSTREAM (FEET) = 3634.00 DOWNSTREAM (FEET) = 3625.00

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 13.220

* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 2.087

SUBAREA Tc AND LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
-------------------------------	-------------------	-----------------	-----------------	-----------------	-----------	--------------

NATURAL POOR COVER

"BARREN"	B	5.21	0.27	1.000	86	13.22
----------	---	------	------	-------	----	-------

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.27

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA RUNOFF (CFS) = 8.51

TOTAL AREA (ACRES) = 5.21 PEAK FLOW RATE (CFS) = 8.51

=====

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 5.2 TC (MIN.) = 13.22

EFFECTIVE AREA (ACRES) = 5.21 AREA-AVERAGED Fm (INCH/HR) = 0.27

AREA-AVERAGED Fp (INCH/HR) = 0.27 AREA-AVERAGED Ap = 1.000

PEAK FLOW RATE (CFS) = 8.51

=====

END OF RATIONAL METHOD ANALYSIS

SMALL AREA UNIT HYDROGRAPH MODEL

(C) Copyright 1989-2015 Advanced Engineering Software (aes)
Ver. 22.0 Release Date: 07/01/2015 License ID 1510

Analysis prepared by:

DRC Engineering, Inc.
160 South Old Springs Road, Suite 210
Anaheim, CA 92808
714-685-6860

Problem Descriptions:

AREA A
EXISTING 10-YEAR HYDROGRAPH
KILGALLON INDUSTRIAL

RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90
TOTAL CATCHMENT AREA (ACRES) = 0.55
SOIL-LOSS RATE, F_m , (INCH/HR) = 0.272
LOW LOSS FRACTION = 0.384
TIME OF CONCENTRATION (MIN.) = 11.64
SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
USER SPECIFIED RAINFALL VALUES ARE USED
RETURN FREQUENCY (YEARS) = 10
5-MINUTE POINT RAINFALL VALUE (INCHES) = 0.21
30-MINUTE POINT RAINFALL VALUE (INCHES) = 0.56
1-HOUR POINT RAINFALL VALUE (INCHES) = 0.79
3-HOUR POINT RAINFALL VALUE (INCHES) = 1.32
6-HOUR POINT RAINFALL VALUE (INCHES) = 1.86
24-HOUR POINT RAINFALL VALUE (INCHES) = 3.71

TOTAL CATCHMENT RUNOFF VOLUME (ACRE-FEET) = 0.10
TOTAL CATCHMENT SOIL-LOSS VOLUME (ACRE-FEET) = 0.07

TIME (HOURS)	VOLUME (AF)	Q (CFS)	0.	2.5	5.0	7.5	10.0
0.09	0.0000	0.00	Q	.	.	.	.
0.29	0.0002	0.02	Q	.	.	.	.
0.48	0.0006	0.02	Q	.	.	.	.
0.67	0.0009	0.02	Q	.	.	.	.
0.87	0.0013	0.02	Q	.	.	.	.
1.06	0.0017	0.02	Q	.	.	.	.
1.26	0.0021	0.02	Q	.	.	.	.
1.45	0.0025	0.02	Q	.	.	.	.
1.64	0.0029	0.02	Q	.	.	.	.
1.84	0.0033	0.02	Q	.	.	.	.
2.03	0.0037	0.02	Q	.	.	.	.
2.23	0.0041	0.03	Q	.	.	.	.
2.42	0.0045	0.03	Q	.	.	.	.
2.61	0.0049	0.03	Q	.	.	.	.
2.81	0.0053	0.03	Q	.	.	.	.

3.00	0.0057	0.03	Q	.	.	.	.
3.20	0.0061	0.03	Q	.	.	.	.
3.39	0.0066	0.03	Q	.	.	.	.
3.58	0.0070	0.03	Q	.	.	.	.
3.78	0.0074	0.03	Q	.	.	.	.
3.97	0.0078	0.03	Q	.	.	.	.
4.17	0.0083	0.03	Q	.	.	.	.
4.36	0.0087	0.03	Q	.	.	.	.
4.55	0.0092	0.03	Q	.	.	.	.
4.75	0.0096	0.03	Q	.	.	.	.
4.94	0.0100	0.03	Q	.	.	.	.
5.14	0.0105	0.03	Q	.	.	.	.
5.33	0.0110	0.03	Q	.	.	.	.
5.52	0.0114	0.03	Q	.	.	.	.
5.72	0.0119	0.03	Q	.	.	.	.
5.91	0.0123	0.03	Q	.	.	.	.
6.11	0.0128	0.03	Q	.	.	.	.
6.30	0.0133	0.03	Q	.	.	.	.
6.49	0.0138	0.03	Q	.	.	.	.
6.69	0.0143	0.03	Q	.	.	.	.
6.88	0.0148	0.03	Q	.	.	.	.
7.08	0.0153	0.03	Q	.	.	.	.
7.27	0.0158	0.03	Q	.	.	.	.
7.46	0.0163	0.03	Q	.	.	.	.
7.66	0.0168	0.03	Q	.	.	.	.
7.85	0.0173	0.03	Q	.	.	.	.
8.05	0.0178	0.03	Q	.	.	.	.
8.24	0.0184	0.03	Q	.	.	.	.
8.43	0.0189	0.03	Q	.	.	.	.
8.63	0.0194	0.03	Q	.	.	.	.
8.82	0.0200	0.03	Q	.	.	.	.
9.02	0.0206	0.04	Q	.	.	.	.
9.21	0.0211	0.04	Q	.	.	.	.
9.40	0.0217	0.04	Q	.	.	.	.
9.60	0.0223	0.04	Q	.	.	.	.
9.79	0.0229	0.04	Q	.	.	.	.
9.99	0.0235	0.04	Q	.	.	.	.
10.18	0.0241	0.04	Q	.	.	.	.
10.37	0.0247	0.04	Q	.	.	.	.
10.57	0.0253	0.04	Q	.	.	.	.
10.76	0.0260	0.04	Q	.	.	.	.
10.96	0.0266	0.04	Q	.	.	.	.
11.15	0.0273	0.04	Q	.	.	.	.
11.34	0.0280	0.04	Q	.	.	.	.
11.54	0.0287	0.04	Q	.	.	.	.
11.73	0.0294	0.04	Q	.	.	.	.
11.93	0.0301	0.05	Q	.	.	.	.
12.12	0.0309	0.05	Q	.	.	.	.
12.31	0.0316	0.05	Q	.	.	.	.
12.51	0.0324	0.05	Q	.	.	.	.
12.70	0.0332	0.05	Q	.	.	.	.
12.90	0.0340	0.05	Q	.	.	.	.
13.09	0.0349	0.05	Q	.	.	.	.
13.28	0.0357	0.05	Q	.	.	.	.
13.48	0.0366	0.06	Q	.	.	.	.
13.67	0.0376	0.06	Q	.	.	.	.
13.87	0.0385	0.06	Q	.	.	.	.
14.06	0.0396	0.06	Q	.	.	.	.
14.25	0.0406	0.06	Q	.	.	.	.
14.45	0.0416	0.07	Q	.	.	.	.
14.64	0.0428	0.07	Q	.	.	.	.
14.84	0.0440	0.08	Q	.	.	.	.
15.03	0.0453	0.09	Q	.	.	.	.

15.22	0.0467	0.09	Q	.	.	.	.
15.42	0.0483	0.11	Q	.	.	.	.
15.61	0.0502	0.13	Q	.	.	.	.
15.81	0.0528	0.18	Q	.	.	.	.
16.00	0.0562	0.25	.Q	.	.	.	.
16.19	0.0640	0.72	. Q	.	.	.	.
16.39	0.0710	0.15	Q	.	.	.	.
16.58	0.0730	0.10	Q	.	.	.	.
16.78	0.0744	0.08	Q	.	.	.	.
16.97	0.0756	0.07	Q	.	.	.	.
17.16	0.0767	0.06	Q	.	.	.	.
17.36	0.0777	0.06	Q	.	.	.	.
17.55	0.0787	0.06	Q	.	.	.	.
17.75	0.0795	0.05	Q	.	.	.	.
17.94	0.0803	0.05	Q	.	.	.	.
18.13	0.0811	0.05	Q	.	.	.	.
18.33	0.0819	0.05	Q	.	.	.	.
18.52	0.0826	0.04	Q	.	.	.	.
18.72	0.0833	0.04	Q	.	.	.	.
18.91	0.0839	0.04	Q	.	.	.	.
19.10	0.0845	0.04	Q	.	.	.	.
19.30	0.0852	0.04	Q	.	.	.	.
19.49	0.0857	0.04	Q	.	.	.	.
19.69	0.0863	0.04	Q	.	.	.	.
19.88	0.0869	0.03	Q	.	.	.	.
20.07	0.0874	0.03	Q	.	.	.	.
20.27	0.0880	0.03	Q	.	.	.	.
20.46	0.0885	0.03	Q	.	.	.	.
20.66	0.0890	0.03	Q	.	.	.	.
20.85	0.0895	0.03	Q	.	.	.	.
21.04	0.0900	0.03	Q	.	.	.	.
21.24	0.0905	0.03	Q	.	.	.	.
21.43	0.0909	0.03	Q	.	.	.	.
21.63	0.0914	0.03	Q	.	.	.	.
21.82	0.0918	0.03	Q	.	.	.	.
22.01	0.0923	0.03	Q	.	.	.	.
22.21	0.0927	0.03	Q	.	.	.	.
22.40	0.0931	0.03	Q	.	.	.	.
22.60	0.0936	0.03	Q	.	.	.	.
22.79	0.0940	0.03	Q	.	.	.	.
22.98	0.0944	0.03	Q	.	.	.	.
23.18	0.0948	0.03	Q	.	.	.	.
23.37	0.0952	0.02	Q	.	.	.	.
23.57	0.0956	0.02	Q	.	.	.	.
23.76	0.0960	0.02	Q	.	.	.	.
23.95	0.0964	0.02	Q	.	.	.	.
24.15	0.0967	0.02	Q	.	.	.	.
24.34	0.0969	0.00	Q	.	.	.	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
=====	=====
0%	1443.4
10%	139.7
20%	46.6
30%	23.3
40%	11.6
50%	11.6

60%	11.6
70%	11.6
80%	11.6
90%	11.6

SMALL AREA UNIT HYDROGRAPH MODEL

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Ver. 22.0 Release Date: 07/01/2015 License ID 1510

Analysis prepared by:

DRC Engineering, Inc.
160 South Old Springs Road, Suite 210
Anaheim, CA 92808
714-685-6860

Problem Descriptions:

AREA B
EXISTING 10-YEAR STORM EVENT
KILIGALLON INDUSTRIAL

RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90
TOTAL CATCHMENT AREA(ACRES) = 2.13
SOIL-LOSS RATE, Fm, (INCH/HR) = 0.272
LOW LOSS FRACTION = 0.384
TIME OF CONCENTRATION(MIN.) = 12.36
SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
USER SPECIFIED RAINFALL VALUES ARE USED
RETURN FREQUENCY(YEARS) = 10
5-MINUTE POINT RAINFALL VALUE(INCHES) = 0.21
30-MINUTE POINT RAINFALL VALUE(INCHES) = 0.56
1-HOUR POINT RAINFALL VALUE(INCHES) = 0.79
3-HOUR POINT RAINFALL VALUE(INCHES) = 1.32
6-HOUR POINT RAINFALL VALUE(INCHES) = 1.86
24-HOUR POINT RAINFALL VALUE(INCHES) = 3.71

TOTAL CATCHMENT RUNOFF VOLUME (ACRE-FEET) = 0.38
TOTAL CATCHMENT SOIL-LOSS VOLUME (ACRE-FEET) = 0.28

TIME	VOLUME	Q	0.	2.5	5.0	7.5
10.0						
(HOURS)	(AF)	(CFS)				
0.14	0.0005	0.09				
Q	.	.	.	.	.	.
0.34	0.0021	0.09				
Q	.	.	.	.	.	.
0.55	0.0036	0.09				
Q	.	.	.	.	.	.
0.76	0.0052	0.09				
Q	.	.	.	.	.	.
0.96	0.0068	0.09				
Q	.	.	.	.	.	.
1.17	0.0084	0.09				
Q	.	.	.	.	.	.
1.37	0.0100	0.09				
Q	.	.	.	.	.	.
1.58	0.0116	0.10				
Q	.	.	.	.	.	.
1.79	0.0132	0.10				
Q	.	.	.	.	.	.
1.99	0.0149	0.10				
Q	.	.	.	.	.	.
2.20	0.0165	0.10				
Q	.	.	.	.	.	.
2.40	0.0182	0.10				
Q	.	.	.	.	.	.
2.61	0.0199	0.10				
Q	.	.	.	.	.	.
2.82	0.0215	0.10				
Q	.	.	.	.	.	.
3.02	0.0232	0.10				
Q	.	.	.	.	.	.
3.23	0.0250	0.10				
Q	.	.	.	.	.	.
3.43	0.0267	0.10				
Q	.	.	.	.	.	.
3.64	0.0284	0.10				
Q	.	.	.	.	.	.
3.85	0.0302	0.10				
Q	.	.	.	.	.	.
4.05	0.0320	0.10				
Q	.	.	.	.	.	.

	4.26	0.0337	0.11		
Q	4.46	0.0355	0.11	.	.
Q	4.67	0.0374	0.11	.	.
Q	4.88	0.0392	0.11	.	.
Q	5.08	0.0411	0.11	.	.
Q	5.29	0.0429	0.11	.	.
Q	5.49	0.0448	0.11	.	.
Q	5.70	0.0467	0.11	.	.
Q	5.91	0.0486	0.11	.	.
Q	6.11	0.0506	0.11	.	.
Q	6.32	0.0525	0.12	.	.
Q	6.52	0.0545	0.12	.	.
Q	6.73	0.0565	0.12	.	.
Q	6.94	0.0586	0.12	.	.
Q	7.14	0.0606	0.12	.	.
Q	7.35	0.0627	0.12	.	.
Q	7.55	0.0648	0.12	.	.
Q	7.76	0.0669	0.13	.	.
Q	7.97	0.0691	0.13	.	.
Q	8.17	0.0712	0.13	.	.
Q	8.38	0.0735	0.13	.	.
Q	8.58	0.0757	0.13	.	.
Q	8.79	0.0780	0.13	.	.
Q	9.00	0.0803	0.14	.	.
Q	9.20	0.0826	0.14	.	.
Q	9.41	0.0850	0.14	.	.
Q	.	.	.	.	.

	9.61	0.0874	0.14		
Q					
	9.82	0.0898	0.14		
Q					
	10.03	0.0923	0.15		
Q					
	10.23	0.0948	0.15		
Q					
	10.44	0.0974	0.15		
Q					
	10.64	0.1000	0.15		
Q					
	10.85	0.1027	0.16		
Q					
	11.06	0.1054	0.16		
Q					
	11.26	0.1081	0.17		
Q					
	11.47	0.1110	0.17		
Q					
	11.67	0.1139	0.17		
Q					
	11.88	0.1168	0.18		
Q					
	12.09	0.1199	0.18		
Q					
	12.29	0.1230	0.18		
Q					
	12.50	0.1261	0.19		
Q					
	12.70	0.1294	0.19		
Q					
	12.91	0.1328	0.20		
Q					
	13.12	0.1362	0.21		
Q					
	13.32	0.1398	0.22		
Q					
	13.53	0.1436	0.22		
Q					
	13.73	0.1475	0.23		
Q					
	13.94	0.1515	0.24		
Q					
	14.15	0.1557	0.25		
Q					
	14.35	0.1599			
0.25 .Q					
	14.56	0.1644			
0.27 .Q					
	14.76	0.1692			
0.29 .Q					

14.97	0.1744				
0.32 .Q	.	.	.	.	.
15.18	0.1800				
0.34 .Q	.	.	.	.	.
15.38	0.1864				
0.41 .Q	.	.	.	.	.
15.59	0.1940				
0.49 .Q	.	.	.	.	.
15.79	0.2040	0.68	.		
Q	.	.	.	.	.
16.00	0.2177	0.93	.		
Q	.	.	.	.	.
16.21	0.2486	2.70	.		
Q	.	.	.	.	.
16.41	0.2764	0.56	.		
Q	.	.	.	.	.
16.62	0.2843				
0.37 .Q	.	.	.	.	.
16.82	0.2901				
0.30 .Q	.	.	.	.	.
17.03	0.2949				
0.26 .Q	.	.	.	.	.
17.24	0.2992	0.25			
Q	.	.	.	.	.
17.44	0.3033	0.23	.		
Q	.	.	.	.	.
17.65	0.3070	0.21	.		
Q	.	.	.	.	.
17.85	0.3105	0.20	.		
Q	.	.	.	.	.
18.06	0.3138	0.19	.		
Q	.	.	.	.	.
18.27	0.3169	0.18	.		
Q	.	.	.	.	.
18.47	0.3199	0.17	.		
Q	.	.	.	.	.
18.68	0.3227	0.16	.		
Q	.	.	.	.	.
18.88	0.3254	0.16	.		
Q	.	.	.	.	.
19.09	0.3280	0.15	.		
Q	.	.	.	.	.
19.30	0.3305	0.15	.		
Q	.	.	.	.	.
19.50	0.3330	0.14	.		
Q	.	.	.	.	.
19.71	0.3354	0.14	.		
Q	.	.	.	.	.
19.91	0.3377	0.13	.		
Q	.	.	.	.	.
20.12	0.3399	0.13	.		
Q	.	.	.	.	.

	20.33	0.3421	0.13		
Q	20.53	0.3442	0.12	.	.
Q	20.74	0.3463	0.12	.	.
Q	20.94	0.3483	0.12	.	.
Q	21.15	0.3503	0.12	.	.
Q	21.36	0.3522	0.11	.	.
Q	21.56	0.3541	0.11	.	.
Q	21.77	0.3560	0.11	.	.
Q	21.97	0.3578	0.11	.	.
Q	22.18	0.3596	0.10	.	.
Q	22.39	0.3614	0.10	.	.
Q	22.59	0.3632	0.10	.	.
Q	22.80	0.3649	0.10	.	.
Q	23.00	0.3666	0.10	.	.
Q	23.21	0.3682	0.10	.	.
Q	23.42	0.3699	0.10	.	.
Q	23.62	0.3715	0.09	.	.
Q	23.83	0.3731	0.09	.	.
Q	24.03	0.3746	0.09	.	.
Q	24.24	0.3754	0.00	.	.
Q	.	.	.	.	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
 (Note: 100% of Peak Flow Rate estimate assumed to have
 an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
=====	=====
0%	1446.1

10%	148.3
20%	49.4
30%	24.7
40%	12.4
50%	12.4
60%	12.4
70%	12.4
80%	12.4
90%	12.4

SMALL AREA UNIT HYDROGRAPH MODEL

=====

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Analysis prepared by:

DRC Engineering, Inc.
160 South Old Springs Road, Suite 210
Anaheim, CA 92808
714-685-6860

Problem Descriptions:

AREA C
EXISTING 10-YEAR STORM EVENT
KILGALLON

RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90
TOTAL CATCHMENT AREA(ACRES) = 5.21
SOIL-LOSS RATE, Fm, (INCH/HR) = 0.272
LOW LOSS FRACTION = 0.384
TIME OF CONCENTRATION(MIN.) = 13.22
SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
USER SPECIFIED RAINFALL VALUES ARE USED
RETURN FREQUENCY(YEARS) = 10
5-MINUTE POINT RAINFALL VALUE(INCHES) = 0.21
30-MINUTE POINT RAINFALL VALUE(INCHES) = 0.56
1-HOUR POINT RAINFALL VALUE(INCHES) = 0.79
3-HOUR POINT RAINFALL VALUE(INCHES) = 1.32
6-HOUR POINT RAINFALL VALUE(INCHES) = 1.86
24-HOUR POINT RAINFALL VALUE(INCHES) = 3.71

TOTAL CATCHMENT RUNOFF VOLUME (ACRE-FEET) = 0.92
TOTAL CATCHMENT SOIL-LOSS VOLUME (ACRE-FEET) = 0.69

TIME	VOLUME	Q	0.	2.5	5.0	7.5
10.0						
(HOURS)	(AF)	(CFS)				

0.14	0.0000	0.00				
Q	.	.	.	.	.	.
0.36	0.0020	0.22				
Q	.	.	.	.	.	.
0.58	0.0061	0.22				
Q	.	.	.	.	.	.
0.80	0.0102	0.23				
Q	.	.	.	.	.	.
1.02	0.0144	0.23				
Q	.	.	.	.	.	.
1.24	0.0186	0.23				
Q	.	.	.	.	.	.
1.46	0.0228	0.23				
Q	.	.	.	.	.	.
1.68	0.0270	0.23				
Q	.	.	.	.	.	.
1.90	0.0313	0.24				
Q	.	.	.	.	.	.
2.12	0.0356	0.24				
Q	.	.	.	.	.	.
2.34	0.0399	0.24				
Q	.	.	.	.	.	.
2.56	0.0443	0.24				
Q	.	.	.	.	.	.
2.78	0.0487	0.24				
Q	.	.	.	.	.	.
3.00	0.0531	0.25				
Q	.	.	.	.	.	.
3.22	0.0576	0.25				
Q	.	.	.	.	.	.
3.44	0.0621	0.25				
Q	.	.	.	.	.	.
3.66	0.0667					
0.25 .Q	.	.	.	.	.	.
3.88	0.0713					
0.25 .Q	.	.	.	.	.	.
4.10	0.0759					
0.26 .Q	.	.	.	.	.	.
4.32	0.0806					
0.26 .Q	.	.	.	.	.	.

4.54	0.0854			
0.26 .Q	.	.	.	.
4.76	0.0901			
0.26 .Q	.	.	.	.
4.98	0.0949			
0.27 .Q	.	.	.	.
5.20	0.0998			
0.27 .Q	.	.	.	.
5.42	0.1047			
0.27 .Q	.	.	.	.
5.64	0.1097			
0.27 .Q	.	.	.	.
5.86	0.1147			
0.28 .Q	.	.	.	.
6.08	0.1198			
0.28 .Q	.	.	.	.
6.31	0.1249			
0.28 .Q	.	.	.	.
6.53	0.1301			
0.29 .Q	.	.	.	.
6.75	0.1354			
0.29 .Q	.	.	.	.
6.97	0.1407			
0.29 .Q	.	.	.	.
7.19	0.1460			
0.30 .Q	.	.	.	.
7.41	0.1515			
0.30 .Q	.	.	.	.
7.63	0.1570			
0.30 .Q	.	.	.	.
7.85	0.1626			
0.31 .Q	.	.	.	.
8.07	0.1682			
0.31 .Q	.	.	.	.
8.29	0.1740			
0.32 .Q	.	.	.	.
8.51	0.1798			
0.32 .Q	.	.	.	.
8.73	0.1857			
0.33 .Q	.	.	.	.
8.95	0.1917			
0.33 .Q	.	.	.	.
9.17	0.1977			
0.34 .Q	.	.	.	.
9.39	0.2039			
0.34 .Q	.	.	.	.
9.61	0.2102			
0.35 .Q	.	.	.	.
9.83	0.2166			
0.35 .Q	.	.	.	.
10.05	0.2231			
0.36 .Q	.	.	.	.

10.27	0.2297			
0.37 .Q	.	.	.	.
10.49	0.2364			
0.37 .Q	.	.	.	.
10.71	0.2433			
0.38 .Q	.	.	.	.
10.93	0.2503			
0.39 .Q	.	.	.	.
11.15	0.2575			
0.40 .Q	.	.	.	.
11.37	0.2648			
0.41 .Q	.	.	.	.
11.59	0.2723			
0.41 .Q	.	.	.	.
11.81	0.2800			
0.43 .Q	.	.	.	.
12.03	0.2878			
0.44 .Q	.	.	.	.
12.25	0.2959			
0.45 .Q	.	.	.	.
12.47	0.3041			
0.46 .Q	.	.	.	.
12.70	0.3127			
0.48 .Q	.	.	.	.
12.92	0.3214			
0.49 .Q	.	.	.	.
13.14	0.3305	0.51	.	.
Q	.	.	.	.
13.36	0.3400	0.52	.	.
Q	.	.	.	.
13.58	0.3498	0.55	.	.
Q	.	.	.	.
13.80	0.3600	0.57	.	.
Q	.	.	.	.
14.02	0.3708	0.61	.	.
Q	.	.	.	.
14.24	0.3819	0.61	.	.
Q	.	.	.	.
14.46	0.3933	0.65	.	.
Q	.	.	.	.
14.68	0.4053	0.68	.	.
Q	.	.	.	.
14.90	0.4184	0.76	.	.
Q	.	.	.	.
15.12	0.4327	0.81	.	.
Q	.	.	.	.
15.34	0.4488	0.96	.	.
Q	.	.	.	.
15.56	0.4678	1.12	.	.
Q	.	.	.	.
15.78	0.4925	1.59	.	.
Q	.	.	.	.

16.00	0.5268	2.18	.		
Q .	.	.	.		
16.22	0.6046	6.37	.	.	.
Q .	.	.	.		
16.44	0.6746	1.32	.		
Q .	.	.	.	.	
16.66	0.6947	0.88	.		
Q .	.	.	.	.	
16.88	0.7092	0.72	.		
Q .	.	.	.	.	
17.10	0.7213	0.62	.		
Q .	.	.	.	.	
17.32	0.7323	0.59	.		
Q .	.	.	.	.	
17.54	0.7426	0.54	.		
Q .	.	.	.	.	
17.76	0.7520				
0.50 .Q	.	.	.	.	
17.98	0.7608				
0.47 .Q	.	.	.	.	
18.20	0.7691				
0.44 .Q	.	.	.	.	
18.42	0.7770				
0.42 .Q	.	.	.	.	
18.64	0.7845				
0.40 .Q	.	.	.	.	
18.86	0.7916				
0.38 .Q	.	.	.	.	
19.08	0.7985				
0.37 .Q	.	.	.	.	
19.31	0.8051				
0.36 .Q	.	.	.	.	
19.53	0.8115				
0.34 .Q	.	.	.	.	
19.75	0.8177				
0.33 .Q	.	.	.	.	
19.97	0.8237				
0.32 .Q	.	.	.	.	
20.19	0.8295				
0.31 .Q	.	.	.	.	
20.41	0.8351				
0.31 .Q	.	.	.	.	
20.63	0.8407				
0.30 .Q	.	.	.	.	
20.85	0.8460				
0.29 .Q	.	.	.	.	
21.07	0.8513				
0.28 .Q	.	.	.	.	
21.29	0.8564				
0.28 .Q	.	.	.	.	
21.51	0.8614				
0.27 .Q	.	.	.	.	

21.73	0.8663				
0.27 .Q	.	.	.	.	.
21.95	0.8712				
0.26 .Q	.	.	.	.	.
22.17	0.8759				
0.26 .Q	.	.	.	.	.
22.39	0.8805				
0.25 .Q	.	.	.	.	.
22.61	0.8851	0.25			
Q	.	.	.	.	.
22.83	0.8896	0.24			
Q	.	.	.	.	.
23.05	0.8940	0.24			
Q	.	.	.	.	.
23.27	0.8983	0.24			
Q	.	.	.	.	.
23.49	0.9026	0.23			
Q	.	.	.	.	.
23.71	0.9068	0.23			
Q	.	.	.	.	.
23.93	0.9109	0.23			
Q	.	.	.	.	.
24.15	0.9150	0.22			
Q	.	.	.	.	.
24.37	0.9171	0.00			
Q	.	.	.	.	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
 (Note: 100% of Peak Flow Rate estimate assumed to have
 an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
=====	=====
0%	1441.0
10%	158.6
20%	52.9
30%	26.4
40%	13.2
50%	13.2
60%	13.2
70%	13.2
80%	13.2
90%	13.2

RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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Ver. 22.0 Release Date: 07/01/2015 License ID 1510

Analysis prepared by:

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***** DESCRIPTION OF STUDY *****
* KILGALLON INDUSTRIAL *
* EXISTING SITE ANALYSIS *
* 100-YEAR STORM EVENT *

FILE NAME: 20569E10.DAT
TIME/DATE OF STUDY: 10:36 03/31/2020

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 100.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 6.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
USER-DEFINED TABLED RAINFALL USED

NUMBER OF [TIME,INTENSITY] DATA PAIRS = 4
1) 5.00; 2.560
2) 30.00; 1.120
3) 60.00; 0.793
4) 360.00; 0.310

ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD

USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

1. Relative Flow-Depth = 0.00 FEET
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
2. (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)

*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

+-----+
| AREA A |
| EXISTING 100-YEAR STORM EVENT |
| KILGALLON INDUSTRIAL |
+-----+

FLOW PROCESS FROM NODE 100.00 TO NODE 101.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<

>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH (FEET) = 295.00
ELEVATION DATA: UPSTREAM (FEET) = 3628.80 DOWNSTREAM (FEET) = 3624.00

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 11.636

* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.178

SUBAREA T_c AND LOSS RATE DATA (AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
-------------------------------	-------------------	-----------------	--------------------	--------------------	-----------	-----------------

NATURAL POOR COVER

"BARREN"	B	0.55	0.11	1.000	97	11.64
----------	---	------	------	-------	----	-------

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.11

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 1.000

SUBAREA RUNOFF (CFS) = 1.03

TOTAL AREA (ACRES) = 0.55 PEAK FLOW RATE (CFS) = 1.03

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+-----+
| AREA B                                     |
| 100-YEAR STORM EVENT                       |
| KILGALLON INDUSTRIAL                       |
+-----+
```

FLOW PROCESS FROM NODE 200.00 TO NODE 201.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<

>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH (FEET) = 333.00

ELEVATION DATA: UPSTREAM (FEET) = 3628.80 DOWNSTREAM (FEET) = 3623.70

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 12.363

* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.136

SUBAREA T_c AND LOSS RATE DATA (AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
-------------------------------	-------------------	-----------------	--------------------	--------------------	-----------	-----------------

NATURAL POOR COVER

"BARREN"	B	2.13	0.11	1.000	97	12.36
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SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.11

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 1.000

SUBAREA RUNOFF (CFS) = 3.89

TOTAL AREA (ACRES) = 2.13 PEAK FLOW RATE (CFS) = 3.89

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+-----+
| AREA C                                     |
| 10-YEAR STORM EVENT                       |
| KILGALLON INDUSTRIAL                       |
+-----+
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FLOW PROCESS FROM NODE 300.00 TO NODE 301.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<

>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH (FEET) = 450.00

ELEVATION DATA: UPSTREAM (FEET) = 3634.00 DOWNSTREAM (FEET) = 3625.00

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 13.220

* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.087

SUBAREA Tc AND LOSS RATE DATA (AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL POOR COVER						
"BARREN"	B	5.21	0.11	1.000	97	13.22
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.11						
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000						
SUBAREA RUNOFF (CFS) = 9.29						
TOTAL AREA (ACRES) = 5.21 PEAK FLOW RATE (CFS) = 9.29						

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END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 5.2 TC (MIN.) = 13.22
EFFECTIVE AREA (ACRES) = 5.21 AREA-AVERAGED Fm (INCH/HR) = 0.11
AREA-AVERAGED Fp (INCH/HR) = 0.11 AREA-AVERAGED Ap = 1.000
PEAK FLOW RATE (CFS) = 9.29

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END OF RATIONAL METHOD ANALYSIS

SMALL AREA UNIT HYDROGRAPH MODEL

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Analysis prepared by:

DRC Engineering, Inc.
160 South Old Springs Road, Suite 210
Anaheim, CA 92808
714-685-6860

Problem Descriptions:

AREA A
EXISTING 100-YEAR STORM EVENT
KILGALLON INDUSTRIAL

RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90
TOTAL CATCHMENT AREA(ACRES) = 0.55
SOIL-LOSS RATE, Fm, (INCH/HR) = 0.106
LOW LOSS FRACTION = 0.056
TIME OF CONCENTRATION(MIN.) = 11.64
SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
USER SPECIFIED RAINFALL VALUES ARE USED
RETURN FREQUENCY(YEARS) = 100
5-MINUTE POINT RAINFALL VALUE(INCHES) = 0.36
30-MINUTE POINT RAINFALL VALUE(INCHES) = 0.93
1-HOUR POINT RAINFALL VALUE(INCHES) = 1.32
3-HOUR POINT RAINFALL VALUE(INCHES) = 2.20
6-HOUR POINT RAINFALL VALUE(INCHES) = 3.11
24-HOUR POINT RAINFALL VALUE(INCHES) = 6.42

TOTAL CATCHMENT RUNOFF VOLUME (ACRE-FEET) = 0.25
 TOTAL CATCHMENT SOIL-LOSS VOLUME (ACRE-FEET) = 0.05

TIME	VOLUME	Q	0.	2.5	5.0	7.5
10.0						
(HOURS)	(AF)	(CFS)				
0.09	0.0000	0.00				
Q	.	.	.	.	.	.
0.29	0.0005	0.07				
Q	.	.	.	.	.	.
0.48	0.0016	0.07				
Q	.	.	.	.	.	.
0.67	0.0026	0.07				
Q	.	.	.	.	.	.
0.87	0.0037	0.07				
Q	.	.	.	.	.	.
1.06	0.0048	0.07				
Q	.	.	.	.	.	.
1.26	0.0059	0.07				
Q	.	.	.	.	.	.
1.45	0.0070	0.07				
Q	.	.	.	.	.	.
1.64	0.0080	0.07				
Q	.	.	.	.	.	.
1.84	0.0091	0.07				
Q	.	.	.	.	.	.
2.03	0.0103	0.07				
Q	.	.	.	.	.	.
2.23	0.0114	0.07				
Q	.	.	.	.	.	.
2.42	0.0125	0.07				
Q	.	.	.	.	.	.
2.61	0.0136	0.07				
Q	.	.	.	.	.	.
2.81	0.0148	0.07				
Q	.	.	.	.	.	.
3.00	0.0159	0.07				
Q	.	.	.	.	.	.
3.20	0.0171	0.07				
Q	.	.	.	.	.	.
3.39	0.0182	0.07				
Q	.	.	.	.	.	.
3.58	0.0194	0.07				
Q	.	.	.	.	.	.
3.78	0.0206	0.07				
Q	.	.	.	.	.	.

	3.97	0.0218	0.07		
Q	4.17	0.0230	0.08	.	.
Q	4.36	0.0242	0.08	.	.
Q	4.55	0.0254	0.08	.	.
Q	4.75	0.0266	0.08	.	.
Q	4.94	0.0278	0.08	.	.
Q	5.14	0.0291	0.08	.	.
Q	5.33	0.0304	0.08	.	.
Q	5.52	0.0316	0.08	.	.
Q	5.72	0.0329	0.08	.	.
Q	5.91	0.0342	0.08	.	.
Q	6.11	0.0355	0.08	.	.
Q	6.30	0.0368	0.08	.	.
Q	6.49	0.0381	0.08	.	.
Q	6.69	0.0395	0.08	.	.
Q	6.88	0.0408	0.08	.	.
Q	7.08	0.0422	0.09	.	.
Q	7.27	0.0436	0.09	.	.
Q	7.46	0.0450	0.09	.	.
Q	7.66	0.0464	0.09	.	.
Q	7.85	0.0478	0.09	.	.
Q	8.05	0.0492	0.09	.	.
Q	8.24	0.0507	0.09	.	.
Q	8.43	0.0522	0.09	.	.
Q	8.63	0.0537	0.09	.	.
Q	8.82	0.0552	0.09	.	.
Q	.	.	.	.	.

	9.02	0.0567	0.10		
Q					
	9.21	0.0582	0.10		
Q					
	9.40	0.0598	0.10		
Q					
	9.60	0.0614	0.10		
Q					
	9.79	0.0630	0.10		
Q					
	9.99	0.0647	0.10		
Q					
	10.18	0.0663	0.10		
Q					
	10.37	0.0680	0.11		
Q					
	10.57	0.0697	0.11		
Q					
	10.76	0.0715	0.11		
Q					
	10.96	0.0732	0.11		
Q					
	11.15	0.0751	0.11		
Q					
	11.34	0.0769	0.12		
Q					
	11.54	0.0788	0.12		
Q					
	11.73	0.0807	0.12		
Q					
	11.93	0.0826	0.12		
Q					
	12.12	0.0846	0.13		
Q					
	12.31	0.0866	0.12		
Q					
	12.51	0.0886	0.13		
Q					
	12.70	0.0907	0.13		
Q					
	12.90	0.0928	0.13		
Q					
	13.09	0.0950	0.14		
Q					
	13.28	0.0972	0.14		
Q					
	13.48	0.0996	0.15		
Q					
	13.67	0.1020	0.15		
Q					
	13.87	0.1045	0.16		
Q					

	14.06	0.1071	0.17		
Q	14.25	0.1098	0.16	.	.
Q	14.45	0.1125	0.17	.	.
Q	14.64	0.1153	0.19	.	.
Q	14.84	0.1184	0.20	.	.
Q	15.03	0.1217	0.22	.	.
Q	15.22	0.1254	0.23	.	.
Q	15.42	0.1295		.	.
0.28	.Q	.	.	.	.
	15.61	0.1344			
0.33	.Q	.	.	.	.
	15.81	0.1408			
0.46	.Q	.	.	.	.
	16.00	0.1494	0.61	.	
Q	16.19	0.1653	1.38	.	.
Q	16.39	0.1794	.	.	
0.38	.Q	.	.	.	.
	16.58	0.1844			
0.25	.Q	.	.	.	.
	16.78	0.1881	0.21		
Q	16.97	0.1912	0.18	.	.
Q	17.16	0.1940	0.17	.	.
Q	17.36	0.1966	0.16	.	.
Q	17.55	0.1990	0.15	.	.
Q	17.75	0.2012	0.14	.	.
Q	17.94	0.2034	0.13	.	.
Q	18.13	0.2054	0.12	.	.
Q	18.33	0.2073	0.12	.	.
Q	18.52	0.2092	0.12	.	.
Q	18.72	0.2111	0.11	.	.
Q	18.91	0.2128	0.11	.	.
Q	.	.	.	.	.

	19.10	0.2146	0.11		
Q	19.30	0.2162	0.10	.	.
Q	19.49	0.2178	0.10	.	.
Q	19.69	0.2194	0.10	.	.
Q	19.88	0.2209	0.09	.	.
Q	20.07	0.2224	0.09	.	.
Q	20.27	0.2239	0.09	.	.
Q	20.46	0.2253	0.09	.	.
Q	20.66	0.2267	0.09	.	.
Q	20.85	0.2281	0.08	.	.
Q	21.04	0.2294	0.08	.	.
Q	21.24	0.2307	0.08	.	.
Q	21.43	0.2320	0.08	.	.
Q	21.63	0.2333	0.08	.	.
Q	21.82	0.2345	0.08	.	.
Q	22.01	0.2358	0.08	.	.
Q	22.21	0.2370	0.07	.	.
Q	22.40	0.2382	0.07	.	.
Q	22.60	0.2393	0.07	.	.
Q	22.79	0.2405	0.07	.	.
Q	22.98	0.2416	0.07	.	.
Q	23.18	0.2427	0.07	.	.
Q	23.37	0.2439	0.07	.	.
Q	23.57	0.2449	0.07	.	.
Q	23.76	0.2460	0.07	.	.
Q	23.95	0.2471	0.07	.	.
Q	.	.	.	.	.

	24.15		0.2481		0.07
Q		.		.	
	24.34		0.2487		0.00
Q		.		.	

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
=====	=====
0%	1443.4
10%	279.4
20%	69.8
30%	34.9
40%	23.3
50%	11.6
60%	11.6
70%	11.6
80%	11.6
90%	11.6

SMALL AREA UNIT HYDROGRAPH MODEL

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Analysis prepared by:

DRC Engineering, Inc.
160 South Old Springs Road, Suite 210
Anaheim, CA 92808
714-685-6860

Problem Descriptions:

AREA B
EXISTING 100-YEAR STORM EVENT
KILGALLON INDUSTRIAL

RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90
TOTAL CATCHMENT AREA(ACRES) = 2.13
SOIL-LOSS RATE, Fm, (INCH/HR) = 0.106
LOW LOSS FRACTION = 0.056
TIME OF CONCENTRATION(MIN.) = 12.36
SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
USER SPECIFIED RAINFALL VALUES ARE USED
RETURN FREQUENCY(YEARS) = 100
5-MINUTE POINT RAINFALL VALUE(INCHES) = 0.36
30-MINUTE POINT RAINFALL VALUE(INCHES) = 0.93
1-HOUR POINT RAINFALL VALUE(INCHES) = 1.32
3-HOUR POINT RAINFALL VALUE(INCHES) = 2.20
6-HOUR POINT RAINFALL VALUE(INCHES) = 3.11
24-HOUR POINT RAINFALL VALUE(INCHES) = 6.42

TOTAL CATCHMENT RUNOFF VOLUME (ACRE-FEET) = 0.96
 TOTAL CATCHMENT SOIL-LOSS VOLUME (ACRE-FEET) = 0.18

TIME (HOURS)	VOLUME (AF)	Q (CFS)	0.	2.5	5.0	7.5
10.0						

0.14	0.0014					
0.25 .Q	.	.	.	.	.	.
0.34	0.0058					
0.25 .Q	.	.	.	.	.	.
0.55	0.0101					
0.26 .Q	.	.	.	.	.	.
0.76	0.0145					
0.26 .Q	.	.	.	.	.	.
0.96	0.0189					
0.26 .Q	.	.	.	.	.	.
1.17	0.0233					
0.26 .Q	.	.	.	.	.	.
1.37	0.0278					
0.26 .Q	.	.	.	.	.	.
1.58	0.0323					
0.26 .Q	.	.	.	.	.	.
1.79	0.0368					
0.27 .Q	.	.	.	.	.	.
1.99	0.0413					
0.27 .Q	.	.	.	.	.	.
2.20	0.0459					
0.27 .Q	.	.	.	.	.	.
2.40	0.0505					
0.27 .Q	.	.	.	.	.	.
2.61	0.0552					
0.27 .Q	.	.	.	.	.	.
2.82	0.0598					
0.28 .Q	.	.	.	.	.	.
3.02	0.0646					
0.28 .Q	.	.	.	.	.	.
3.23	0.0693					
0.28 .Q	.	.	.	.	.	.
3.43	0.0741					
0.28 .Q	.	.	.	.	.	.
3.64	0.0789					
0.28 .Q	.	.	.	.	.	.
3.85	0.0838					
0.29 .Q	.	.	.	.	.	.
4.05	0.0887					
0.29 .Q	.	.	.	.	.	.

4.26	0.0936			
0.29 .Q	.	.	.	.
4.46	0.0986			
0.29 .Q	.	.	.	.
4.67	0.1036			
0.30 .Q	.	.	.	.
4.88	0.1087			
0.30 .Q	.	.	.	.
5.08	0.1138			
0.30 .Q	.	.	.	.
5.29	0.1189			
0.30 .Q	.	.	.	.
5.49	0.1242			
0.31 .Q	.	.	.	.
5.70	0.1294			
0.31 .Q	.	.	.	.
5.91	0.1347			
0.31 .Q	.	.	.	.
6.11	0.1401			
0.32 .Q	.	.	.	.
6.32	0.1455			
0.32 .Q	.	.	.	.
6.52	0.1509			
0.32 .Q	.	.	.	.
6.73	0.1564			
0.33 .Q	.	.	.	.
6.94	0.1620			
0.33 .Q	.	.	.	.
7.14	0.1676			
0.33 .Q	.	.	.	.
7.35	0.1733			
0.34 .Q	.	.	.	.
7.55	0.1791			
0.34 .Q	.	.	.	.
7.76	0.1849			
0.34 .Q	.	.	.	.
7.97	0.1908			
0.35 .Q	.	.	.	.
8.17	0.1968			
0.35 .Q	.	.	.	.
8.38	0.2028			
0.36 .Q	.	.	.	.
8.58	0.2089			
0.36 .Q	.	.	.	.
8.79	0.2151			
0.37 .Q	.	.	.	.
9.00	0.2214			
0.37 .Q	.	.	.	.
9.20	0.2277			
0.38 .Q	.	.	.	.
9.41	0.2342			
0.38 .Q	.	.	.	.

9.61	0.2407			
0.39 .Q	.	.	.	.
9.82	0.2474			
0.39 .Q	.	.	.	.
10.03	0.2541			
0.40 .Q	.	.	.	.
10.23	0.2610			
0.40 .Q	.	.	.	.
10.44	0.2680			
0.41 .Q	.	.	.	.
10.64	0.2750			
0.42 .Q	.	.	.	.
10.85	0.2823			
0.43 .Q	.	.	.	.
11.06	0.2896			
0.43 .Q	.	.	.	.
11.26	0.2971			
0.45 .Q	.	.	.	.
11.47	0.3048			
0.45 .Q	.	.	.	.
11.67	0.3126			
0.47 .Q	.	.	.	.
11.88	0.3206			
0.47 .Q	.	.	.	.
12.09	0.3287			
0.48 .Q	.	.	.	.
12.29	0.3369			
0.47 .Q	.	.	.	.
12.50	0.3451			
0.49 .Q	.	.	.	.
12.70	0.3535	0.50	.	
Q	.	.	.	
12.91	0.3622	0.52	.	
Q	.	.	.	
13.12	0.3712	0.53	.	
Q	.	.	.	
13.32	0.3805	0.56	.	
Q	.	.	.	
13.53	0.3901	0.57	.	
Q	.	.	.	
13.73	0.4002	0.60	.	
Q	.	.	.	
13.94	0.4106	0.62	.	
Q	.	.	.	
14.15	0.4213	0.64	.	
Q	.	.	.	
14.35	0.4322	0.64	.	
Q	.	.	.	
14.56	0.4437	0.70	.	
Q	.	.	.	
14.76	0.4559	0.74	.	
Q	.	.	.	

14.97	0.4692	0.82	.		
Q	.	.	.	.	
15.18	0.4837	0.88	.		
Q	.	.	.	.	
15.38	0.5000	1.04	.		
Q	.	.	.	.	
15.59	0.5194	1.23	.		
Q	.	.	.	.	
15.79	0.5446	1.73	.		
Q	.	.	.	.	
16.00	0.5788	2.29	.		
Q	.	.	.	.	
16.21	0.6425	5.18	.		.
Q	.	.	.	.	
16.41	0.6987	1.42	.		
Q	.	.	.	.	
16.62	0.7188	0.95	.		
Q	.	.	.	.	
16.82	0.7335	0.78	.		
Q	.	.	.	.	
17.03	0.7458	0.67	.		
Q	.	.	.	.	
17.24	0.7570	0.64	.		
Q	.	.	.	.	
17.44	0.7674	0.59	.		
Q	.	.	.	.	
17.65	0.7771	0.55	.		
Q	.	.	.	.	
17.85	0.7861	0.51	.		
Q	.	.	.	.	
18.06	0.7945				
0.48 .Q	.	.	.	.	.
18.27	0.8027				
0.48 .Q	.	.	.	.	.
18.47	0.8107				
0.46 .Q	.	.	.	.	.
18.68	0.8184				
0.44 .Q	.	.	.	.	.
18.88	0.8257				
0.42 .Q	.	.	.	.	.
19.09	0.8328				
0.41 .Q	.	.	.	.	.
19.30	0.8397				
0.40 .Q	.	.	.	.	.
19.50	0.8463				
0.38 .Q	.	.	.	.	.
19.71	0.8528				
0.37 .Q	.	.	.	.	.
19.91	0.8591				
0.36 .Q	.	.	.	.	.
20.12	0.8652				
0.35 .Q	.	.	.	.	.

20.33	0.8711			
0.35 .Q	.	.	.	.
20.53	0.8770			
0.34 .Q	.	.	.	.
20.74	0.8826			
0.33 .Q	.	.	.	.
20.94	0.8882			
0.32 .Q	.	.	.	.
21.15	0.8937			
0.32 .Q	.	.	.	.
21.36	0.8990			
0.31 .Q	.	.	.	.
21.56	0.9043			
0.31 .Q	.	.	.	.
21.77	0.9094			
0.30 .Q	.	.	.	.
21.97	0.9145			
0.30 .Q	.	.	.	.
22.18	0.9195			
0.29 .Q	.	.	.	.
22.39	0.9244			
0.29 .Q	.	.	.	.
22.59	0.9292			
0.28 .Q	.	.	.	.
22.80	0.9340			
0.28 .Q	.	.	.	.
23.00	0.9386			
0.27 .Q	.	.	.	.
23.21	0.9432			
0.27 .Q	.	.	.	.
23.42	0.9478			
0.27 .Q	.	.	.	.
23.62	0.9523			
0.26 .Q	.	.	.	.
23.83	0.9567			
0.26 .Q	.	.	.	.
24.03	0.9611			
0.26 .Q	.	.	.	.
24.24	0.9633	0.00		
Q	.	.	.	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate =====	Duration (minutes) =====
0%	1446.1

10%	296.6
20%	74.2
30%	37.1
40%	24.7
50%	12.4
60%	12.4
70%	12.4
80%	12.4
90%	12.4

SMALL AREA UNIT HYDROGRAPH MODEL

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Ver. 22.0 Release Date: 07/01/2015 License ID 1510

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Problem Descriptions:

AREA C
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KILGALLON INDUSTRIAL

RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90
TOTAL CATCHMENT AREA(ACRES) = 5.21
SOIL-LOSS RATE, Fm, (INCH/HR) = 0.106
LOW LOSS FRACTION = 0.056
TIME OF CONCENTRATION(MIN.) = 13.22
SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
USER SPECIFIED RAINFALL VALUES ARE USED
RETURN FREQUENCY(YEARS) = 100
5-MINUTE POINT RAINFALL VALUE(INCHES) = 0.36
30-MINUTE POINT RAINFALL VALUE(INCHES) = 0.93
1-HOUR POINT RAINFALL VALUE(INCHES) = 1.32
3-HOUR POINT RAINFALL VALUE(INCHES) = 2.20
6-HOUR POINT RAINFALL VALUE(INCHES) = 3.11
24-HOUR POINT RAINFALL VALUE(INCHES) = 6.42

TOTAL CATCHMENT RUNOFF VOLUME (ACRE-FEET) = 2.35
TOTAL CATCHMENT SOIL-LOSS VOLUME (ACRE-FEET) = 0.43

TIME	VOLUME	Q	0.	5.0	10.0	15.0
(HOURS)	(AF)	(CFS)				
20.0						
0.14	0.0000	0.00				
0.36	0.0057					
0.62 .Q	.	.	.	.	.	.
0.58	0.0170					
0.63 .Q	.	.	.	.	.	.
0.80	0.0285					
0.63 .Q	.	.	.	.	.	.
1.02	0.0400					
0.63 .Q	.	.	.	.	.	.
1.24	0.0516					
0.64 .Q	.	.	.	.	.	.
1.46	0.0633					
0.64 .Q	.	.	.	.	.	.
1.68	0.0751					
0.65 .Q	.	.	.	.	.	.
1.90	0.0869					
0.65 .Q	.	.	.	.	.	.
2.12	0.0989					
0.66 .Q	.	.	.	.	.	.
2.34	0.1109					
0.66 .Q	.	.	.	.	.	.
2.56	0.1230					
0.67 .Q	.	.	.	.	.	.
2.78	0.1353					
0.67 .Q	.	.	.	.	.	.
3.00	0.1476					
0.68 .Q	.	.	.	.	.	.
3.22	0.1600					
0.68 .Q	.	.	.	.	.	.
3.44	0.1725					
0.69 .Q	.	.	.	.	.	.
3.66	0.1851					
0.69 .Q	.	.	.	.	.	.
3.88	0.1978					
0.70 .Q	.	.	.	.	.	.
4.10	0.2107					
0.71 .Q	.	.	.	.	.	.
4.32	0.2236					
0.72 .Q	.	.	.	.	.	.

4.54	0.2367			
0.72 .Q	.	.	.	.
4.76	0.2499			
0.73 .Q	.	.	.	.
4.98	0.2632			
0.73 .Q	.	.	.	.
5.20	0.2766			
0.74 .Q	.	.	.	.
5.42	0.2902			
0.75 .Q	.	.	.	.
5.64	0.3038			
0.76 .Q	.	.	.	.
5.86	0.3177			
0.76 .Q	.	.	.	.
6.08	0.3316			
0.77 .Q	.	.	.	.
6.31	0.3458			
0.78 .Q	.	.	.	.
6.53	0.3600			
0.79 .Q	.	.	.	.
6.75	0.3744			
0.79 .Q	.	.	.	.
6.97	0.3890			
0.81 .Q	.	.	.	.
7.19	0.4038			
0.81 .Q	.	.	.	.
7.41	0.4187			
0.83 .Q	.	.	.	.
7.63	0.4338			
0.83 .Q	.	.	.	.
7.85	0.4491			
0.85 .Q	.	.	.	.
8.07	0.4646			
0.85 .Q	.	.	.	.
8.29	0.4803			
0.87 .Q	.	.	.	.
8.51	0.4962			
0.88 .Q	.	.	.	.
8.73	0.5123			
0.89 .Q	.	.	.	.
8.95	0.5286			
0.90 .Q	.	.	.	.
9.17	0.5452			
0.92 .Q	.	.	.	.
9.39	0.5621			
0.93 .Q	.	.	.	.
9.61	0.5792			
0.95 .Q	.	.	.	.
9.83	0.5965			
0.96 .Q	.	.	.	.
10.05	0.6142			
0.98 .Q	.	.	.	.

	10.27	0.6322			
Q	0.99 .	.	.	.	.
	10.49	0.6505	1.02	.	
Q	.	.	.	.	
	10.71	0.6691	1.03	.	
Q	.	.	.	.	
	10.93	0.6881	1.06	.	
Q	.	.	.	.	
	11.15	0.7075	1.07	.	
Q	.	.	.	.	
	11.37	0.7273	1.10	.	
Q	.	.	.	.	
	11.59	0.7475	1.12	.	
Q	.	.	.	.	
	11.81	0.7682	1.15	.	
Q	.	.	.	.	
	12.03	0.7894	1.17	.	
Q	.	.	.	.	
	12.25	0.8107	1.16	.	
Q	.	.	.	.	
	12.47	0.8320	1.18	.	
Q	.	.	.	.	
	12.70	0.8540	1.23	.	
Q	.	.	.	.	
	12.92	0.8767	1.26	.	
Q	.	.	.	.	
	13.14	0.9003	1.32	.	
Q	.	.	.	.	
	13.36	0.9246	1.35	.	
Q	.	.	.	.	
	13.58	0.9500	1.43	.	
Q	.	.	.	.	
	13.80	0.9764	1.47	.	
Q	.	.	.	.	
	14.02	1.0041	1.57	.	
Q	.	.	.	.	
	14.24	1.0326	1.56	.	
Q	.	.	.	.	
	14.46	1.0618	1.65	.	
Q	.	.	.	.	
	14.68	1.0927	1.73	.	
Q	.	.	.	.	
	14.90	1.1262	1.94	.	
Q	.	.	.	.	
	15.12	1.1628	2.08	.	
Q	.	.	.	.	
	15.34	1.2040	2.45	.	
Q	.	.	.	.	
	15.56	1.2523	2.85	.	
Q	.	.	.	.	
	15.78	1.3151	4.05	.	
Q	.	.	.	.	

16.00	1.4015	5.44	.		
Q 16.22	1.5628	12.27	.	.	.
Q 16.44	1.7050	3.35	.		
Q 16.66	1.7559	2.24	.	.	
Q 16.88	1.7930	1.83	.	.	
Q 17.10	1.8241	1.58	.	.	
Q 17.32	1.8523	1.52	.	.	
Q 17.54	1.8788	1.39	.	.	
Q 17.76	1.9032	1.29	.	.	
Q 17.98	1.9259	1.21	.	.	
Q 18.20	1.9477	1.18	.	.	
Q 18.42	1.9688	1.14	.	.	
Q 18.64	1.9890	1.09	.	.	
Q 18.86	2.0084	1.04	.	.	
Q 19.08	2.0271	1.00	.	.	
Q 19.31	2.0450	.	.	.	
0.97 .Q 19.53	2.0624	.	.	.	
0.94 .Q 19.75	2.0793	.	.	.	
0.91 .Q 19.97	2.0956	.	.	.	
0.89 .Q 20.19	2.1115	.	.	.	
0.86 .Q 20.41	2.1270	.	.	.	
0.84 .Q 20.63	2.1421	.	.	.	
0.82 .Q 20.85	2.1569	.	.	.	
0.80 .Q 21.07	2.1713	.	.	.	
0.78 .Q 21.29	2.1854	.	.	.	
0.77 .Q 21.51	2.1992	.	.	.	
0.75 .Q	.	.	.	.	

21.73	2.2128			
0.74 .Q	.	.	.	.
21.95	2.2261			
0.72 .Q	.	.	.	.
22.17	2.2392			
0.71 .Q	.	.	.	.
22.39	2.2520			
0.70 .Q	.	.	.	.
22.61	2.2646			
0.69 .Q	.	.	.	.
22.83	2.2770			
0.68 .Q	.	.	.	.
23.05	2.2892			
0.67 .Q	.	.	.	.
23.27	2.3013			
0.66 .Q	.	.	.	.
23.49	2.3131			
0.65 .Q	.	.	.	.
23.71	2.3248			
0.64 .Q	.	.	.	.
23.93	2.3364			
0.63 .Q	.	.	.	.
24.15	2.3477			
0.62 .Q	.	.	.	.
24.37	2.3534	0.00		
Q	.	.	.	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
 (Note: 100% of Peak Flow Rate estimate assumed to have
 an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
=====	=====
0%	1441.0
10%	317.3
20%	66.1
30%	39.7
40%	26.4
50%	13.2
60%	13.2
70%	13.2
80%	13.2
90%	13.2

RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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Ver. 22.0 Release Date: 07/01/2015 License ID 1510

Analysis prepared by:

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714-685-6860

***** DESCRIPTION OF STUDY *****

* KILGALLON INDUSTRIAL *
* PROPOSED 10-YEAR STORM EVENT *
* * *

FILE NAME: 20569P10.DAT
TIME/DATE OF STUDY: 13:28 03/31/2020

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USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 10.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 6.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
USER-DEFINED TABLED RAINFALL USED

NUMBER OF [TIME,INTENSITY] DATA PAIRS = 4

1) 5.00; 2.560
2) 30.00; 1.120
3) 60.00; 0.793
4) 360.00; 0.310

ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD

USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

1. Relative Flow-Depth = 0.00 FEET
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
2. (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)

*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

+-----+
| AREA A |
| PROPOSED 10-YEAR STORM EVENT |
| KILGALLON INDUSTRIAL |
+-----+

FLOW PROCESS FROM NODE 100.00 TO NODE 101.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<

>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH (FEET) = 160.00
ELEVATION DATA: UPSTREAM (FEET) = 3631.50 DOWNSTREAM (FEET) = 3628.30

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.062

* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 2.556

SUBAREA T_c AND LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	0.55	0.75	0.100	56	5.06

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.75

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF (CFS) = 1.23

TOTAL AREA (ACRES) = 0.55 PEAK FLOW RATE (CFS) = 1.23

FLOW PROCESS FROM NODE 101.00 TO NODE 102.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM (FEET) = 3625.80 DOWNSTREAM (FEET) = 3625.00

FLOW LENGTH (FEET) = 20.00 MANNING'S N = 0.013

DEPTH OF FLOW IN 9.0 INCH PIPE IS 3.9 INCHES

PIPE-FLOW VELOCITY (FEET/SEC.) = 6.67

ESTIMATED PIPE DIAMETER (INCH) = 9.00 NUMBER OF PIPES = 1

PIPE-FLOW (CFS) = 1.23

PIPE TRAVEL TIME (MIN.) = 0.05 T_c (MIN.) = 5.11

LONGEST FLOWPATH FROM NODE 100.00 TO NODE 102.00 = 180.00 FEET.

AREA B	
PROPOSED 10-YEAR STORM EVENT	
KILGALLON INDUSTRIAL	

FLOW PROCESS FROM NODE 200.00 TO NODE 201.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<

>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH (FEET) = 315.00

ELEVATION DATA: UPSTREAM (FEET) = 3631.50 DOWNSTREAM (FEET) = 3625.00

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 6.596

* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 2.468

SUBAREA T_c AND LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	2.13	0.75	0.100	56	6.60

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.75

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF (CFS) = 4.59

TOTAL AREA (ACRES) = 2.13 PEAK FLOW RATE (CFS) = 4.59

FLOW PROCESS FROM NODE 201.00 TO NODE 202.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 3620.00 DOWNSTREAM(FEET) = 3618.00
FLOW LENGTH(FEET) = 10.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 9.0 INCH PIPE IS 5.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 16.92
ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 4.59
PIPE TRAVEL TIME(MIN.) = 0.01 Tc(MIN.) = 6.61
LONGEST FLOWPATH FROM NODE 200.00 TO NODE 202.00 = 325.00 FEET.

+-----+
| AREA C |
| PROPOSED 10-YEAR STORM EVENT |
| KILGALLON INDUSTRIAL |
+-----+

FLOW PROCESS FROM NODE 300.00 TO NODE 301.00 IS CODE = 21

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH(FEET) = 255.00
ELEVATION DATA: UPSTREAM(FEET) = 3634.00 DOWNSTREAM(FEET) = 3630.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 6.403
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 2.479
SUBAREA Tc AND LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL B 5.21 0.75 0.100 56 6.40
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 11.27
TOTAL AREA(ACRES) = 5.21 PEAK FLOW RATE(CFS) = 11.27

FLOW PROCESS FROM NODE 301.00 TO NODE 302.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 3623.80 DOWNSTREAM(FEET) = 3620.00
FLOW LENGTH(FEET) = 555.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 21.0 INCH PIPE IS 15.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 5.86
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 11.27
PIPE TRAVEL TIME(MIN.) = 1.58 Tc(MIN.) = 7.98
LONGEST FLOWPATH FROM NODE 300.00 TO NODE 302.00 = 810.00 FEET.

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 5.2 TC(MIN.) = 7.98
EFFECTIVE AREA(ACRES) = 5.21 AREA-AVERAGED Fm(INCH/HR) = 0.07
AREA-AVERAGED Fp(INCH/HR) = 0.75 AREA-AVERAGED Ap = 0.100
PEAK FLOW RATE(CFS) = 11.27

END OF RATIONAL METHOD ANALYSIS

SMALL AREA UNIT HYDROGRAPH MODEL

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Analysis prepared by:

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Problem Descriptions:

AREA A
PROP 10

RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90
TOTAL CATCHMENT AREA(ACRES) = 0.55
SOIL-LOSS RATE, Fm, (INCH/HR) = 0.269
LOW LOSS FRACTION = 0.356
TIME OF CONCENTRATION(MIN.) = 5.11
SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
USER SPECIFIED RAINFALL VALUES ARE USED
RETURN FREQUENCY(YEARS) = 10
5-MINUTE POINT RAINFALL VALUE(INCHES) = 0.21
30-MINUTE POINT RAINFALL VALUE(INCHES) = 0.56
1-HOUR POINT RAINFALL VALUE(INCHES) = 0.79
3-HOUR POINT RAINFALL VALUE(INCHES) = 1.32
6-HOUR POINT RAINFALL VALUE(INCHES) = 1.86
24-HOUR POINT RAINFALL VALUE(INCHES) = 3.71

TOTAL CATCHMENT RUNOFF VOLUME (ACRE-FEET) = 0.10
TOTAL CATCHMENT SOIL-LOSS VOLUME (ACRE-FEET) = 0.07

	TIME	VOLUME	Q	0.	2.5	5.0	7.5
	(HOURS)	(AF)	(CFS)				
	10.0						
	0.07	0.0001	0.02				
Q	.	.	.	.	.	.	.
	0.16	0.0002	0.02				
Q	.	.	.	.	.	.	.
	0.24	0.0004	0.02				
Q	.	.	.	.	.	.	.
	0.33	0.0006	0.02				
Q	.	.	.	.	.	.	.
	0.41	0.0008	0.02				
Q	.	.	.	.	.	.	.
	0.50	0.0009	0.02				
Q	.	.	.	.	.	.	.
	0.58	0.0011	0.02				
Q	.	.	.	.	.	.	.
	0.67	0.0013	0.03				
Q	.	.	.	.	.	.	.
	0.76	0.0015	0.03				
Q	.	.	.	.	.	.	.
	0.84	0.0016	0.03				
Q	.	.	.	.	.	.	.
	0.93	0.0018	0.03				
Q	.	.	.	.	.	.	.
	1.01	0.0020	0.03				
Q	.	.	.	.	.	.	.
	1.10	0.0022	0.03				
Q	.	.	.	.	.	.	.
	1.18	0.0024	0.03				
Q	.	.	.	.	.	.	.
	1.27	0.0025	0.03				
Q	.	.	.	.	.	.	.
	1.35	0.0027	0.03				
Q	.	.	.	.	.	.	.
	1.44	0.0029	0.03				
Q	.	.	.	.	.	.	.
	1.52	0.0031	0.03				
Q	.	.	.	.	.	.	.
	1.61	0.0033	0.03				
Q	.	.	.	.	.	.	.
	1.69	0.0034	0.03				
Q	.	.	.	.	.	.	.

	1.78	0.0036	0.03		
Q	1.86	0.0038	0.03	.	.
Q	1.95	0.0040	0.03	.	.
Q	2.03	0.0042	0.03	.	.
Q	2.12	0.0044	0.03	.	.
Q	2.20	0.0045	0.03	.	.
Q	2.29	0.0047	0.03	.	.
Q	2.37	0.0049	0.03	.	.
Q	2.46	0.0051	0.03	.	.
Q	2.54	0.0053	0.03	.	.
Q	2.63	0.0055	0.03	.	.
Q	2.71	0.0057	0.03	.	.
Q	2.80	0.0059	0.03	.	.
Q	2.88	0.0061	0.03	.	.
Q	2.97	0.0062	0.03	.	.
Q	3.05	0.0064	0.03	.	.
Q	3.14	0.0066	0.03	.	.
Q	3.22	0.0068	0.03	.	.
Q	3.31	0.0070	0.03	.	.
Q	3.40	0.0072	0.03	.	.
Q	3.48	0.0074	0.03	.	.
Q	3.57	0.0076	0.03	.	.
Q	3.65	0.0078	0.03	.	.
Q	3.74	0.0080	0.03	.	.
Q	3.82	0.0082	0.03	.	.
Q	3.91	0.0084	0.03	.	.
Q	.	.	.	.	.

	3.99	0.0086	0.03		
Q	4.08	0.0088	0.03	.	.
Q	4.16	0.0090	0.03	.	.
Q	4.25	0.0092	0.03	.	.
Q	4.33	0.0094	0.03	.	.
Q	4.42	0.0096	0.03	.	.
Q	4.50	0.0098	0.03	.	.
Q	4.59	0.0100	0.03	.	.
Q	4.67	0.0102	0.03	.	.
Q	4.76	0.0104	0.03	.	.
Q	4.84	0.0106	0.03	.	.
Q	4.93	0.0108	0.03	.	.
Q	5.01	0.0110	0.03	.	.
Q	5.10	0.0112	0.03	.	.
Q	5.18	0.0114	0.03	.	.
Q	5.27	0.0116	0.03	.	.
Q	5.35	0.0119	0.03	.	.
Q	5.44	0.0121	0.03	.	.
Q	5.52	0.0123	0.03	.	.
Q	5.61	0.0125	0.03	.	.
Q	5.69	0.0127	0.03	.	.
Q	5.78	0.0129	0.03	.	.
Q	5.87	0.0131	0.03	.	.
Q	5.95	0.0134	0.03	.	.
Q	6.04	0.0136	0.03	.	.
Q	6.12	0.0138	0.03	.	.
Q	.	.	.	.	.

	6.21	0.0140	0.03		
Q	6.29	0.0142	0.03	.	.
Q	6.38	0.0145	0.03	.	.
Q	6.46	0.0147	0.03	.	.
Q	6.55	0.0149	0.03	.	.
Q	6.63	0.0151	0.03	.	.
Q	6.72	0.0154	0.03	.	.
Q	6.80	0.0156	0.03	.	.
Q	6.89	0.0158	0.03	.	.
Q	6.97	0.0160	0.03	.	.
Q	7.06	0.0163	0.03	.	.
Q	7.14	0.0165	0.03	.	.
Q	7.23	0.0167	0.03	.	.
Q	7.31	0.0170	0.03	.	.
Q	7.40	0.0172	0.03	.	.
Q	7.48	0.0174	0.03	.	.
Q	7.57	0.0177	0.03	.	.
Q	7.65	0.0179	0.03	.	.
Q	7.74	0.0181	0.03	.	.
Q	7.82	0.0184	0.03	.	.
Q	7.91	0.0186	0.03	.	.
Q	7.99	0.0189	0.03	.	.
Q	8.08	0.0191	0.03	.	.
Q	8.16	0.0194	0.03	.	.
Q	8.25	0.0196	0.04	.	.
Q	8.34	0.0199	0.04	.	.
Q	.	.	.	.	.

	8.42	0.0201	0.04		
Q					
	8.51	0.0204	0.04		
Q					
	8.59	0.0206	0.04		
Q					
	8.68	0.0209	0.04		
Q					
	8.76	0.0211	0.04		
Q					
	8.85	0.0214	0.04		
Q					
	8.93	0.0216	0.04		
Q					
	9.02	0.0219	0.04		
Q					
	9.10	0.0222	0.04		
Q					
	9.19	0.0224	0.04		
Q					
	9.27	0.0227	0.04		
Q					
	9.36	0.0229	0.04		
Q					
	9.44	0.0232	0.04		
Q					
	9.53	0.0235	0.04		
Q					
	9.61	0.0238	0.04		
Q					
	9.70	0.0240	0.04		
Q					
	9.78	0.0243	0.04		
Q					
	9.87	0.0246	0.04		
Q					
	9.95	0.0249	0.04		
Q					
	10.04	0.0251	0.04		
Q					
	10.12	0.0254	0.04		
Q					
	10.21	0.0257	0.04		
Q					
	10.29	0.0260	0.04		
Q					
	10.38	0.0263	0.04		
Q					
	10.46	0.0266	0.04		
Q					
	10.55	0.0269	0.04		
Q					

	10.63	0.0272	0.04		
Q	10.72	0.0275	0.04	.	.
Q	10.80	0.0278	0.04	.	.
Q	10.89	0.0281	0.04	.	.
Q	10.98	0.0284	0.04	.	.
Q	11.06	0.0287	0.04	.	.
Q	11.15	0.0290	0.04	.	.
Q	11.23	0.0293	0.04	.	.
Q	11.32	0.0296	0.05	.	.
Q	11.40	0.0299	0.05	.	.
Q	11.49	0.0303	0.05	.	.
Q	11.57	0.0306	0.05	.	.
Q	11.66	0.0309	0.05	.	.
Q	11.74	0.0312	0.05	.	.
Q	11.83	0.0316	0.05	.	.
Q	11.91	0.0319	0.05	.	.
Q	12.00	0.0323	0.05	.	.
Q	12.08	0.0326	0.05	.	.
Q	12.17	0.0330	0.05	.	.
Q	12.25	0.0333	0.05	.	.
Q	12.34	0.0337	0.05	.	.
Q	12.42	0.0340	0.05	.	.
Q	12.51	0.0344	0.05	.	.
Q	12.59	0.0347	0.05	.	.
Q	12.68	0.0351	0.05	.	.
Q	12.76	0.0355	0.05	.	.
Q	.	.	.	.	.

	12.85	0.0359	0.05		
Q	12.93	0.0363	0.06	.	.
Q	13.02	0.0367	0.06	.	.
Q	13.10	0.0371	0.06	.	.
Q	13.19	0.0375	0.06	.	.
Q	13.27	0.0379	0.06	.	.
Q	13.36	0.0383	0.06	.	.
Q	13.45	0.0387	0.06	.	.
Q	13.53	0.0391	0.06	.	.
Q	13.62	0.0396	0.06	.	.
Q	13.70	0.0400	0.06	.	.
Q	13.79	0.0405	0.06	.	.
Q	13.87	0.0409	0.07	.	.
Q	13.96	0.0414	0.07	.	.
Q	14.04	0.0419	0.07	.	.
Q	14.13	0.0423	0.07	.	.
Q	14.21	0.0428	0.07	.	.
Q	14.30	0.0433	0.07	.	.
Q	14.38	0.0438	0.07	.	.
Q	14.47	0.0443	0.07	.	.
Q	14.55	0.0448	0.08	.	.
Q	14.64	0.0454	0.08	.	.
Q	14.72	0.0459	0.08	.	.
Q	14.81	0.0465	0.08	.	.
Q	14.89	0.0471	0.09	.	.
Q	14.98	0.0477	0.09	.	.
Q	.	.	.	.	.

	15.06	0.0484	0.09		
Q	15.15	0.0490	0.10	.	.
Q	15.23	0.0498	0.10	.	.
Q	15.32	0.0505	0.11	.	.
Q	15.40	0.0513	0.13	.	.
Q	15.49	0.0523	0.14	.	.
Q	15.57	0.0533	0.15	.	.
Q	15.66	0.0544	0.16	.	.
Q	15.74	0.0556	0.20	.	.
Q	15.83	0.0571	0.22	.	.
Q	15.91	0.0589		.	.
0.31	.Q	.	.	.	.
	16.00	0.0615			
0.43	.Q	.	.	.	.
	16.09	0.0670	1.12	.	.
Q	.	.	.	.	.
	16.17	0.0718	0.24		
Q	16.26	0.0732	0.17	.	.
Q	16.34	0.0744	0.14	.	.
Q	16.43	0.0753	0.11	.	.
Q	16.51	0.0760	0.10	.	.
Q	16.60	0.0767	0.09	.	.
Q	16.68	0.0773	0.08	.	.
Q	16.77	0.0779	0.08	.	.
Q	16.85	0.0784	0.07	.	.
Q	16.94	0.0789	0.07	.	.
Q	17.02	0.0794	0.07	.	.
Q	17.11	0.0799	0.07	.	.
Q	17.19	0.0804	0.07	.	.
Q	.	.	.	.	.

	17.28	0.0808	0.06		
Q	17.36	0.0812	0.06	.	.
Q	17.45	0.0817	0.06	.	.
Q	17.53	0.0821	0.06	.	.
Q	17.62	0.0825	0.06	.	.
Q	17.70	0.0829	0.05	.	.
Q	17.79	0.0832	0.05	.	.
Q	17.87	0.0836	0.05	.	.
Q	17.96	0.0840	0.05	.	.
Q	18.04	0.0843	0.05	.	.
Q	18.13	0.0847	0.05	.	.
Q	18.21	0.0850	0.05	.	.
Q	18.30	0.0853	0.05	.	.
Q	18.38	0.0857	0.05	.	.
Q	18.47	0.0860	0.04	.	.
Q	18.56	0.0863	0.04	.	.
Q	18.64	0.0866	0.04	.	.
Q	18.73	0.0869	0.04	.	.
Q	18.81	0.0872	0.04	.	.
Q	18.90	0.0875	0.04	.	.
Q	18.98	0.0878	0.04	.	.
Q	19.07	0.0881	0.04	.	.
Q	19.15	0.0883	0.04	.	.
Q	19.24	0.0886	0.04	.	.
Q	19.32	0.0889	0.04	.	.
Q	19.41	0.0892	0.04	.	.
Q	.	.	.	.	.

	19.49	0.0894	0.04		
Q	19.58	0.0897	0.04	.	.
Q	19.66	0.0900	0.04	.	.
Q	19.75	0.0902	0.04	.	.
Q	19.83	0.0905	0.04	.	.
Q	19.92	0.0907	0.04	.	.
Q	20.00	0.0910	0.04	.	.
Q	20.09	0.0912	0.03	.	.
Q	20.17	0.0915	0.03	.	.
Q	20.26	0.0917	0.03	.	.
Q	20.34	0.0919	0.03	.	.
Q	20.43	0.0922	0.03	.	.
Q	20.51	0.0924	0.03	.	.
Q	20.60	0.0926	0.03	.	.
Q	20.68	0.0929	0.03	.	.
Q	20.77	0.0931	0.03	.	.
Q	20.85	0.0933	0.03	.	.
Q	20.94	0.0935	0.03	.	.
Q	21.02	0.0938	0.03	.	.
Q	21.11	0.0940	0.03	.	.
Q	21.20	0.0942	0.03	.	.
Q	21.28	0.0944	0.03	.	.
Q	21.37	0.0946	0.03	.	.
Q	21.45	0.0948	0.03	.	.
Q	21.54	0.0950	0.03	.	.
Q	21.62	0.0952	0.03	.	.
Q	.	.	.	.	.

	21.71	0.0955	0.03		
Q	21.79	0.0957	0.03	.	.
Q	21.88	0.0959	0.03	.	.
Q	21.96	0.0961	0.03	.	.
Q	22.05	0.0963	0.03	.	.
Q	22.13	0.0965	0.03	.	.
Q	22.22	0.0967	0.03	.	.
Q	22.30	0.0969	0.03	.	.
Q	22.39	0.0971	0.03	.	.
Q	22.47	0.0973	0.03	.	.
Q	22.56	0.0974	0.03	.	.
Q	22.64	0.0976	0.03	.	.
Q	22.73	0.0978	0.03	.	.
Q	22.81	0.0980	0.03	.	.
Q	22.90	0.0982	0.03	.	.
Q	22.98	0.0984	0.03	.	.
Q	23.07	0.0986	0.03	.	.
Q	23.15	0.0988	0.03	.	.
Q	23.24	0.0989	0.03	.	.
Q	23.32	0.0991	0.03	.	.
Q	23.41	0.0993	0.03	.	.
Q	23.49	0.0995	0.03	.	.
Q	23.58	0.0997	0.03	.	.
Q	23.67	0.0998	0.03	.	.
Q	23.75	0.1000	0.03	.	.
Q	23.84	0.1002	0.02	.	.
Q	.	.	.	.	.

	23.92		0.1004		0.02		
Q		.		.		.	.
	24.01		0.1005		0.02		
Q		.		.		.	.
	24.09		0.1006		0.00		
Q		.		.		.	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
 (Note: 100% of Peak Flow Rate estimate assumed to have
 an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
=====	=====
0%	1441.0
10%	66.4
20%	20.4
30%	10.2
40%	5.1
50%	5.1
60%	5.1
70%	5.1
80%	5.1
90%	5.1

SMALL AREA UNIT HYDROGRAPH MODEL

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Analysis prepared by:

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Problem Descriptions:

AREA B
10-YEAR HYDRO

RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90
TOTAL CATCHMENT AREA(ACRES) = 2.13
SOIL-LOSS RATE, Fm, (INCH/HR) = 0.105
LOW LOSS FRACTION = 0.177
TIME OF CONCENTRATION(MIN.) = 6.60
SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
USER SPECIFIED RAINFALL VALUES ARE USED
RETURN FREQUENCY(YEARS) = 10
5-MINUTE POINT RAINFALL VALUE(INCHES) = 0.21
30-MINUTE POINT RAINFALL VALUE(INCHES) = 0.56
1-HOUR POINT RAINFALL VALUE(INCHES) = 0.79
3-HOUR POINT RAINFALL VALUE(INCHES) = 1.32
6-HOUR POINT RAINFALL VALUE(INCHES) = 1.86
24-HOUR POINT RAINFALL VALUE(INCHES) = 3.71

TOTAL CATCHMENT RUNOFF VOLUME (ACRE-FEET) = 0.49
TOTAL CATCHMENT SOIL-LOSS VOLUME (ACRE-FEET) = 0.17

	TIME	VOLUME	Q	0.	2.5	5.0	7.5
	(HOURS)	(AF)	(CFS)				
	10.0						
	0.05	0.0003	0.12				
Q	0.16	0.0014	0.12	.	.		
Q	0.27	0.0025	0.12	.	.		
Q	0.38	0.0036	0.12	.	.		
Q	0.49	0.0047	0.12	.	.		
Q	0.60	0.0058	0.12	.	.		
Q	0.71	0.0069	0.12	.	.		
Q	0.82	0.0081	0.12	.	.		
Q	0.93	0.0092	0.12	.	.		
Q	1.04	0.0103	0.13	.	.		
Q	1.15	0.0115	0.13	.	.		
Q	1.26	0.0126	0.13	.	.		
Q	1.37	0.0138	0.13	.	.		
Q	1.48	0.0149	0.13	.	.		
Q	1.59	0.0161	0.13	.	.		
Q	1.70	0.0172	0.13	.	.		
Q	1.81	0.0184	0.13	.	.		
Q	1.92	0.0196	0.13	.	.		
Q	2.03	0.0208	0.13	.	.		
Q	2.14	0.0219	0.13	.	.		
Q	.	.	.	.	.		

	2.25	0.0231	0.13		
Q	2.36	0.0243	0.13	.	.
Q	2.47	0.0255	0.13	.	.
Q	2.58	0.0267	0.13	.	.
Q	2.69	0.0279	0.13	.	.
Q	2.80	0.0291	0.13	.	.
Q	2.91	0.0303	0.13	.	.
Q	3.02	0.0316	0.13	.	.
Q	3.13	0.0328	0.14	.	.
Q	3.24	0.0340	0.14	.	.
Q	3.35	0.0352	0.14	.	.
Q	3.46	0.0365	0.14	.	.
Q	3.57	0.0377	0.14	.	.
Q	3.68	0.0390	0.14	.	.
Q	3.79	0.0402	0.14	.	.
Q	3.90	0.0415	0.14	.	.
Q	4.01	0.0428	0.14	.	.
Q	4.12	0.0440	0.14	.	.
Q	4.23	0.0453	0.14	.	.
Q	4.34	0.0466	0.14	.	.
Q	4.45	0.0479	0.14	.	.
Q	4.56	0.0492	0.14	.	.
Q	4.67	0.0505	0.14	.	.
Q	4.78	0.0518	0.14	.	.
Q	4.89	0.0531	0.15	.	.
Q	5.00	0.0545	0.15	.	.
Q	.	.	.	.	.

	5.11	0.0558	0.15		
Q					
	5.22	0.0571	0.15	.	.
Q				.	.
	5.33	0.0585	0.15		
Q				.	.
	5.44	0.0598	0.15		
Q				.	.
	5.55	0.0612	0.15		
Q				.	.
	5.66	0.0625	0.15		
Q				.	.
	5.77	0.0639	0.15		
Q				.	.
	5.88	0.0653	0.15		
Q				.	.
	5.99	0.0667	0.15		
Q				.	.
	6.10	0.0681	0.15		
Q				.	.
	6.21	0.0695	0.15		
Q				.	.
	6.32	0.0709	0.16		
Q				.	.
	6.43	0.0723	0.16		
Q				.	.
	6.54	0.0737	0.16		
Q				.	.
	6.65	0.0752	0.16		
Q				.	.
	6.76	0.0766	0.16		
Q				.	.
	6.87	0.0781	0.16		
Q				.	.
	6.98	0.0795	0.16		
Q				.	.
	7.09	0.0810	0.16		
Q				.	.
	7.20	0.0825	0.16		
Q				.	.
	7.31	0.0840	0.16		
Q				.	.
	7.42	0.0855	0.17		
Q				.	.
	7.53	0.0870	0.17		
Q				.	.
	7.64	0.0885	0.17		
Q				.	.
	7.75	0.0900	0.17		
Q				.	.
	7.86	0.0915	0.17		
Q				.	.

	7.97	0.0931	0.17		
Q	8.08	.	0.0947	.	.
Q	8.19	.	0.0962	.	.
Q	8.30	.	0.0978	.	.
Q	8.41	.	0.0994	.	.
Q	8.52	.	0.1010	.	.
Q	8.63	.	0.1026	.	.
Q	8.74	.	0.1042	.	.
Q	8.85	.	0.1059	.	.
Q	8.96	.	0.1075	.	.
Q	9.07	.	0.1092	.	.
Q	9.18	.	0.1109	.	.
Q	9.29	.	0.1125	.	.
Q	9.40	.	0.1143	.	.
Q	9.51	.	0.1160	.	.
Q	9.62	.	0.1177	.	.
Q	9.73	.	0.1194	.	.
Q	9.84	.	0.1212	.	.
Q	9.95	.	0.1230	.	.
Q	10.06	.	0.1248	.	.
Q	10.17	.	0.1266	.	.
Q	10.28	.	0.1284	.	.
Q	10.39	.	0.1303	.	.
Q	10.50	.	0.1321	.	.
Q	10.61	.	0.1340	.	.
Q	10.72	.	0.1359	.	.
Q	.	.	.	.	.

10.83	0.1378	0.21		
Q 10.94	.	0.1398	.	.
Q 11.05	.	0.1417	.	.
Q 11.16	.	0.1437	.	.
Q 11.27	.	0.1457	.	.
Q 11.38	.	0.1477	.	.
Q 11.49	.	0.1498	.	.
Q 11.60	.	0.1519	.	.
Q 11.71	.	0.1540	.	.
Q 11.82	.	0.1561	.	.
Q 11.93	.	0.1583	.	.
Q 12.04	.	0.1604	.	.
Q 12.15	.	0.1627	.	.
Q 12.26	.	0.1649	.	.
Q 12.37	.	0.1672	.	.
0.25 .Q 12.48	.	0.1695	.	.
0.25 .Q 12.59	.	0.1718	.	.
0.26 .Q 12.70	.	0.1742	.	.
0.26 .Q 12.81	.	0.1766	.	.
0.27 .Q 12.92	.	0.1790	.	.
0.27 .Q 13.03	.	0.1815	.	.
0.28 .Q 13.14	.	0.1841	.	.
0.28 .Q 13.25	.	0.1866	.	.
0.29 .Q 13.36	.	0.1893	.	.
0.29 .Q 13.47	.	0.1920	.	.
0.30 .Q 13.58	.	0.1947	.	.
0.31 .Q	.	.	.	.

13.69	0.1976			
0.31 .Q	.	.	.	.
13.80	0.2004			
0.32 .Q	.	.	.	.
13.91	0.2034			
0.33 .Q	.	.	.	.
14.02	0.2064			
0.34 .Q	.	.	.	.
14.13	0.2094			
0.33 .Q	.	.	.	.
14.24	0.2124			
0.33 .Q	.	.	.	.
14.35	0.2155			
0.35 .Q	.	.	.	.
14.46	0.2187			
0.36 .Q	.	.	.	.
14.57	0.2221			
0.38 .Q	.	.	.	.
14.68	0.2255			
0.39 .Q	.	.	.	.
14.79	0.2291			
0.41 .Q	.	.	.	.
14.90	0.2329			
0.42 .Q	.	.	.	.
15.01	0.2369			
0.45 .Q	.	.	.	.
15.12	0.2411			
0.47 .Q	.	.	.	.
15.23	0.2455	0.51	.	.
Q .	.	.	.	.
15.34	0.2503	0.54	.	.
Q .	.	.	.	.
15.45	0.2557	0.66	.	.
Q .	.	.	.	.
15.56	0.2619	0.70	.	.
Q .	.	.	.	.
15.67	0.2687	0.81	.	.
Q .	.	.	.	.
15.78	0.2767	0.93	.	.
Q .	.	.	.	.
15.89	0.2869	1.32	.	.
Q .	.	.	.	.
16.00	0.3008	1.74	.	.
Q .	.	.	.	.
16.11	0.3274	4.11	.	.
Q .	.	.	.	.
16.22	0.3511	1.10	.	.
Q .	.	.	.	.
16.33	0.3595	0.75	.	.
Q .	.	.	.	.
16.44	0.3655	0.57	.	.
Q .	.	.	.	.

16.55	0.3703			
0.49 .Q	.	.	.	.
16.66	0.3745			
0.44 .Q	.	.	.	.
16.77	0.3783			
0.40 .Q	.	.	.	.
16.88	0.3818			
0.37 .Q	.	.	.	.
16.99	0.3850			
0.34 .Q	.	.	.	.
17.10	0.3881			
0.34 .Q	.	.	.	.
17.21	0.3911			
0.32 .Q	.	.	.	.
17.32	0.3940			
0.31 .Q	.	.	.	.
17.43	0.3967			
0.30 .Q	.	.	.	.
17.54	0.3994			
0.28 .Q	.	.	.	.
17.65	0.4019			
0.27 .Q	.	.	.	.
17.76	0.4043			
0.27 .Q	.	.	.	.
17.87	0.4067			
0.26 .Q	.	.	.	.
17.98	0.4090	0.25		
Q	.	.	.	.
18.09	0.4113	0.24		
Q	.	.	.	.
18.20	0.4134	0.24		
Q	.	.	.	.
18.31	0.4156	0.23		
Q	.	.	.	.
18.42	0.4176	0.23		
Q	.	.	.	.
18.53	0.4197	0.22		
Q	.	.	.	.
18.64	0.4217	0.22		
Q	.	.	.	.
18.75	0.4236	0.21		
Q	.	.	.	.
18.86	0.4255	0.21		
Q	.	.	.	.
18.97	0.4274	0.20		
Q	.	.	.	.
19.08	0.4292	0.20		
Q	.	.	.	.
19.19	0.4310	0.20		
Q	.	.	.	.
19.30	0.4327	0.19		
Q	.	.	.	.

	19.41	0.4345	0.19	
Q	19.52	0.4362	0.19	.
Q	19.63	0.4379	0.18	.
Q	19.74	0.4395	0.18	.
Q	19.85	0.4411	0.18	.
Q	19.96	0.4427	0.17	.
Q	20.07	0.4443	0.17	.
Q	20.18	0.4459	0.17	.
Q	20.29	0.4474	0.17	.
Q	20.40	0.4489	0.17	.
Q	20.51	0.4504	0.16	.
Q	20.62	0.4519	0.16	.
Q	20.73	0.4534	0.16	.
Q	20.84	0.4548	0.16	.
Q	20.95	0.4562	0.16	.
Q	21.06	0.4576	0.15	.
Q	21.17	0.4590	0.15	.
Q	21.28	0.4604	0.15	.
Q	21.39	0.4618	0.15	.
Q	21.50	0.4631	0.15	.
Q	21.61	0.4645	0.15	.
Q	21.72	0.4658	0.14	.
Q	21.83	0.4671	0.14	.
Q	21.94	0.4684	0.14	.
Q	22.05	0.4697	0.14	.
Q	22.16	0.4710	0.14	.
Q	.	.	.	.

	22.27	0.4722	0.14		
Q	22.38	0.4735	0.14	.	.
Q	22.49	0.4747	0.14	.	.
Q	22.60	0.4759	0.13	.	.
Q	22.71	0.4772	0.13	.	.
Q	22.82	0.4784	0.13	.	.
Q	22.93	0.4796	0.13	.	.
Q	23.04	0.4808	0.13	.	.
Q	23.15	0.4819	0.13	.	.
Q	23.26	0.4831	0.13	.	.
Q	23.37	0.4843	0.13	.	.
Q	23.48	0.4854	0.13	.	.
Q	23.59	0.4866	0.13	.	.
Q	23.70	0.4877	0.12	.	.
Q	23.81	0.4888	0.12	.	.
Q	23.92	0.4900	0.12	.	.
Q	24.03	0.4911	0.12	.	.
Q	24.14	0.4916	0.00	.	.
Q	.	.	.	.	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
=====	=====
0%	1445.4
10%	112.2
20%	33.0
30%	19.8
40%	13.2

50%	6.6
60%	6.6
70%	6.6
80%	6.6
90%	6.6

SMALL AREA UNIT HYDROGRAPH MODEL

=====

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Problem Descriptions:
AREA C
PROP 10-YEAR HYDRO

RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90
TOTAL CATCHMENT AREA(ACRES) = 5.21
SOIL-LOSS RATE, Fm, (INCH/HR) = 0.045
LOW LOSS FRACTION = 0.112
TIME OF CONCENTRATION(MIN.) = 7.77
SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
USER SPECIFIED RAINFALL VALUES ARE USED
RETURN FREQUENCY(YEARS) = 10
5-MINUTE POINT RAINFALL VALUE(INCHES) = 0.21
30-MINUTE POINT RAINFALL VALUE(INCHES) = 0.56
1-HOUR POINT RAINFALL VALUE(INCHES) = 0.79
3-HOUR POINT RAINFALL VALUE(INCHES) = 1.32
6-HOUR POINT RAINFALL VALUE(INCHES) = 1.86
24-HOUR POINT RAINFALL VALUE(INCHES) = 3.71

TOTAL CATCHMENT RUNOFF VOLUME (ACRE-FEET) = 1.30
 TOTAL CATCHMENT SOIL-LOSS VOLUME (ACRE-FEET) = 0.32

TIME	VOLUME	Q	0.	2.5	5.0	7.5
10.0						
(HOURS)	(AF)	(CFS)				

0.07	0.0009					
0.32 .Q	.	.	.	.	.	.
0.20	0.0044					
0.32 .Q	.	.	.	.	.	.
0.33	0.0078					
0.32 .Q	.	.	.	.	.	.
0.46	0.0113					
0.32 .Q	.	.	.	.	.	.
0.59	0.0148					
0.33 .Q	.	.	.	.	.	.
0.72	0.0183					
0.33 .Q	.	.	.	.	.	.
0.85	0.0218					
0.33 .Q	.	.	.	.	.	.
0.98	0.0253					
0.33 .Q	.	.	.	.	.	.
1.11	0.0288					
0.33 .Q	.	.	.	.	.	.
1.24	0.0324					
0.33 .Q	.	.	.	.	.	.
1.37	0.0359					
0.33 .Q	.	.	.	.	.	.
1.50	0.0395					
0.34 .Q	.	.	.	.	.	.
1.63	0.0431					
0.34 .Q	.	.	.	.	.	.
1.75	0.0467					
0.34 .Q	.	.	.	.	.	.
1.88	0.0504					
0.34 .Q	.	.	.	.	.	.
2.01	0.0540					
0.34 .Q	.	.	.	.	.	.
2.14	0.0577					
0.34 .Q	.	.	.	.	.	.
2.27	0.0614					
0.34 .Q	.	.	.	.	.	.
2.40	0.0651					
0.35 .Q	.	.	.	.	.	.
2.53	0.0688					
0.35 .Q	.	.	.	.	.	.

2.66	0.0725			
0.35 .Q	.	.	.	.
2.79	0.0763			
0.35 .Q	.	.	.	.
2.92	0.0800			
0.35 .Q	.	.	.	.
3.05	0.0838			
0.35 .Q	.	.	.	.
3.18	0.0876			
0.36 .Q	.	.	.	.
3.31	0.0915			
0.36 .Q	.	.	.	.
3.44	0.0953			
0.36 .Q	.	.	.	.
3.57	0.0992			
0.36 .Q	.	.	.	.
3.70	0.1031			
0.36 .Q	.	.	.	.
3.83	0.1070			
0.37 .Q	.	.	.	.
3.96	0.1109			
0.37 .Q	.	.	.	.
4.09	0.1149			
0.37 .Q	.	.	.	.
4.22	0.1188			
0.37 .Q	.	.	.	.
4.35	0.1228			
0.37 .Q	.	.	.	.
4.47	0.1268			
0.38 .Q	.	.	.	.
4.60	0.1309			
0.38 .Q	.	.	.	.
4.73	0.1349			
0.38 .Q	.	.	.	.
4.86	0.1390			
0.38 .Q	.	.	.	.
4.99	0.1431			
0.39 .Q	.	.	.	.
5.12	0.1473			
0.39 .Q	.	.	.	.
5.25	0.1514			
0.39 .Q	.	.	.	.
5.38	0.1556			
0.39 .Q	.	.	.	.
5.51	0.1598			
0.39 .Q	.	.	.	.
5.64	0.1640			
0.40 .Q	.	.	.	.
5.77	0.1683			
0.40 .Q	.	.	.	.
5.90	0.1726			
0.40 .Q	.	.	.	.

6.03	0.1769			
0.40 .Q	.	.	.	.
6.16	0.1812			
0.41 .Q	.	.	.	.
6.29	0.1856			
0.41 .Q	.	.	.	.
6.42	0.1900			
0.41 .Q	.	.	.	.
6.55	0.1944			
0.42 .Q	.	.	.	.
6.68	0.1989			
0.42 .Q	.	.	.	.
6.81	0.2034			
0.42 .Q	.	.	.	.
6.93	0.2079			
0.42 .Q	.	.	.	.
7.06	0.2124			
0.43 .Q	.	.	.	.
7.19	0.2170			
0.43 .Q	.	.	.	.
7.32	0.2217			
0.43 .Q	.	.	.	.
7.45	0.2263			
0.44 .Q	.	.	.	.
7.58	0.2310			
0.44 .Q	.	.	.	.
7.71	0.2357			
0.44 .Q	.	.	.	.
7.84	0.2405			
0.45 .Q	.	.	.	.
7.97	0.2453			
0.45 .Q	.	.	.	.
8.10	0.2501			
0.45 .Q	.	.	.	.
8.23	0.2550			
0.46 .Q	.	.	.	.
8.36	0.2599			
0.46 .Q	.	.	.	.
8.49	0.2649			
0.46 .Q	.	.	.	.
8.62	0.2699			
0.47 .Q	.	.	.	.
8.75	0.2749			
0.47 .Q	.	.	.	.
8.88	0.2800			
0.48 .Q	.	.	.	.
9.01	0.2851			
0.48 .Q	.	.	.	.
9.14	0.2903			
0.49 .Q	.	.	.	.
9.27	0.2955			
0.49 .Q	.	.	.	.

	9.40	0.3008			
0.50	.Q	.	.	.	.
	9.52	0.3062			
0.50	.Q	.	.	.	.
	9.65	0.3115	0.51	.	
Q	.	.	.	.	
	9.78	0.3170	0.51	.	
Q	.	.	.	.	
	9.91	0.3225	0.52	.	
Q	.	.	.	.	
	10.04	0.3280	0.52	.	
Q	.	.	.	.	
	10.17	0.3336	0.53	.	
Q	.	.	.	.	
	10.30	0.3393	0.53	.	
Q	.	.	.	.	
	10.43	0.3451	0.54	.	
Q	.	.	.	.	
	10.56	0.3509	0.54	.	
Q	.	.	.	.	
	10.69	0.3567	0.55	.	
Q	.	.	.	.	
	10.82	0.3627	0.56	.	
Q	.	.	.	.	
	10.95	0.3687	0.57	.	
Q	.	.	.	.	
	11.08	0.3748	0.57	.	
Q	.	.	.	.	
	11.21	0.3810	0.58	.	
Q	.	.	.	.	
	11.34	0.3872	0.59	.	
Q	.	.	.	.	
	11.47	0.3936	0.60	.	
Q	.	.	.	.	
	11.60	0.4000	0.60	.	
Q	.	.	.	.	
	11.73	0.4065	0.62	.	
Q	.	.	.	.	
	11.86	0.4132	0.62	.	
Q	.	.	.	.	
	11.99	0.4199	0.63	.	
Q	.	.	.	.	
	12.12	0.4267	0.64	.	
Q	.	.	.	.	
	12.24	0.4336	0.65	.	
Q	.	.	.	.	
	12.37	0.4406	0.66	.	
Q	.	.	.	.	
	12.50	0.4478	0.68	.	
Q	.	.	.	.	
	12.63	0.4550	0.68	.	
Q	.	.	.	.	

	12.76	0.4625	0.70	.	
Q	.	.	.	.	.
	12.89	0.4700	0.71	.	
Q	.	.	.	.	.
	13.02	0.4777	0.73	.	
Q	.	.	.	.	.
	13.15	0.4856	0.74	.	
Q	.	.	.	.	.
	13.28	0.4937	0.76	.	
Q	.	.	.	.	.
	13.41	0.5019	0.78	.	
Q	.	.	.	.	.
	13.54	0.5103	0.80	.	
Q	.	.	.	.	.
	13.67	0.5190	0.82	.	
Q	.	.	.	.	.
	13.80	0.5279	0.85	.	
Q	.	.	.	.	.
	13.93	0.5371	0.86	.	
Q	.	.	.	.	.
	14.06	0.5464	0.89	.	
Q	.	.	.	.	.
	14.19	0.5558	0.86	.	
Q	.	.	.	.	.
	14.32	0.5653	0.91	.	
Q	.	.	.	.	.
	14.45	0.5752	0.93	.	
Q	.	.	.	.	.
	14.58	0.5854	0.99	.	
Q	.	.	.	.	.
	14.70	0.5962	1.02	.	
Q	.	.	.	.	.
	14.83	0.6075	1.09	.	
Q	.	.	.	.	.
	14.96	0.6194	1.14	.	
Q	.	.	.	.	.
	15.09	0.6321	1.24	.	
Q	.	.	.	.	.
	15.22	0.6457	1.30	.	
Q	.	.	.	.	.
	15.35	0.6604	1.46	.	
Q	.	.	.	.	.
	15.48	0.6771	1.66	.	
Q	.	.	.	.	.
	15.61	0.6968	2.02	.	
Q	.	.	.	.	.
	15.74	0.7196	2.25	.	
Q	.	.	.	.	.
	15.87	0.7490	3.24	.	
Q	.	.	.	.	.
	16.00	0.7889	4.20	.	
Q	.	.	.	.	.

	16.13	0.8626	9.56	.	.	.	.
Q	.	.	.	.	.	.	.
	16.26	0.9283	2.72	.	.	.	.
Q	.	.	.	.	.	.	.
	16.39	0.9527	1.84	.	.	.	.
Q	.	.	.	.	.	.	.
	16.52	0.9699	1.37	.	.	.	.
Q	.	.	.	.	.	.	.
	16.65	0.9835	1.18	.	.	.	.
Q	.	.	.	.	.	.	.
	16.78	0.9955	1.05	.	.	.	.
Q	.	.	.	.	.	.	.
	16.91	1.0063	0.96	.	.	.	.
Q	.	.	.	.	.	.	.
	17.04	1.0161	0.88	.	.	.	.
Q	.	.	.	.	.	.	.
	17.17	1.0256	0.88	.	.	.	.
Q	.	.	.	.	.	.	.
	17.30	1.0348	0.83	.	.	.	.
Q	.	.	.	.	.	.	.
	17.42	1.0434	0.79	.	.	.	.
Q	.	.	.	.	.	.	.
	17.55	1.0517	0.75	.	.	.	.
Q	.	.	.	.	.	.	.
	17.68	1.0596	0.72	.	.	.	.
Q	.	.	.	.	.	.	.
	17.81	1.0671	0.69	.	.	.	.
Q	.	.	.	.	.	.	.
	17.94	1.0744	0.67	.	.	.	.
Q	.	.	.	.	.	.	.
	18.07	1.0814	0.64	.	.	.	.
Q	.	.	.	.	.	.	.
	18.20	1.0882	0.63	.	.	.	.
Q	.	.	.	.	.	.	.
	18.33	1.0948	0.61	.	.	.	.
Q	.	.	.	.	.	.	.
	18.46	1.1013	0.59	.	.	.	.
Q	.	.	.	.	.	.	.
	18.59	1.1075	0.58	.	.	.	.
Q	.	.	.	.	.	.	.
	18.72	1.1136	0.56	.	.	.	.
Q	.	.	.	.	.	.	.
	18.85	1.1196	0.55	.	.	.	.
Q	.	.	.	.	.	.	.
	18.98	1.1254	0.54	.	.	.	.
Q	.	.	.	.	.	.	.
	19.11	1.1311	0.52	.	.	.	.
Q	.	.	.	.	.	.	.
	19.24	1.1366	0.51	.	.	.	.
Q	.	.	.	.	.	.	.
	19.37	1.1421	0.50	.	.	.	.
Q	.	.	.	.	.	.	.

19.50	1.1474			
0.49 .Q	.	.	.	.
19.63	1.1526			
0.48 .Q	.	.	.	.
19.76	1.1578			
0.48 .Q	.	.	.	.
19.89	1.1628			
0.47 .Q	.	.	.	.
20.01	1.1678			
0.46 .Q	.	.	.	.
20.14	1.1726			
0.45 .Q	.	.	.	.
20.27	1.1774			
0.44 .Q	.	.	.	.
20.40	1.1822			
0.44 .Q	.	.	.	.
20.53	1.1868			
0.43 .Q	.	.	.	.
20.66	1.1914			
0.43 .Q	.	.	.	.
20.79	1.1959			
0.42 .Q	.	.	.	.
20.92	1.2004			
0.41 .Q	.	.	.	.
21.05	1.2048			
0.41 .Q	.	.	.	.
21.18	1.2091			
0.40 .Q	.	.	.	.
21.31	1.2134			
0.40 .Q	.	.	.	.
21.44	1.2176			
0.39 .Q	.	.	.	.
21.57	1.2218			
0.39 .Q	.	.	.	.
21.70	1.2259			
0.38 .Q	.	.	.	.
21.83	1.2300			
0.38 .Q	.	.	.	.
21.96	1.2341			
0.38 .Q	.	.	.	.
22.09	1.2381			
0.37 .Q	.	.	.	.
22.22	1.2420			
0.37 .Q	.	.	.	.
22.35	1.2459			
0.36 .Q	.	.	.	.
22.48	1.2498			
0.36 .Q	.	.	.	.
22.60	1.2536			
0.36 .Q	.	.	.	.
22.73	1.2574			
0.35 .Q	.	.	.	.

22.86	1.2612			
0.35 .Q	.	.	.	.
22.99	1.2649			
0.35 .Q	.	.	.	.
23.12	1.2686			
0.34 .Q	.	.	.	.
23.25	1.2722			
0.34 .Q	.	.	.	.
23.38	1.2758			
0.34 .Q	.	.	.	.
23.51	1.2794			
0.33 .Q	.	.	.	.
23.64	1.2830			
0.33 .Q	.	.	.	.
23.77	1.2865			
0.33 .Q	.	.	.	.
23.90	1.2900			
0.32 .Q	.	.	.	.
24.03	1.2934			
0.32 .Q	.	.	.	.
24.16	1.2952	0.00		.
Q	.	.	.	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
 (Note: 100% of Peak Flow Rate estimate assumed to have
 an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
=====	=====
0%	1445.2
10%	147.6
20%	46.6
30%	23.3
40%	15.5
50%	7.8
60%	7.8
70%	7.8
80%	7.8
90%	7.8

RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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Ver. 22.0 Release Date: 07/01/2015 License ID 1510

Analysis prepared by:

DRC Engineering, Inc.
160 South Old Springs Road, Suite 210
Anaheim, CA 92808
714-685-6860

***** DESCRIPTION OF STUDY *****

* KILGALLON INDUSTRIAL *
* PROPOSED 100-YEAR STORM EVENT *
* * *

FILE NAME: 20569P10.DAT
TIME/DATE OF STUDY: 13:31 03/31/2020

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 100.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 6.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
USER-DEFINED TABLED RAINFALL USED

NUMBER OF [TIME,INTENSITY] DATA PAIRS = 4

1) 5.00; 4.270
2) 30.00; 1.860
3) 60.00; 1.320
4) 360.00; 0.519

ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD

USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

1. Relative Flow-Depth = 0.00 FEET
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
2. (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)

*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

+-----+

| AREA A |
| PROPOSED 100-YEAR STORM EVENT |
| KILGALLON INDUSTRIAL |
+-----+

FLOW PROCESS FROM NODE 100.00 TO NODE 101.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<

>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH (FEET) = 160.00
ELEVATION DATA: UPSTREAM (FEET) = 3631.50 DOWNSTREAM (FEET) = 3628.30

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.062

* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 4.264

SUBAREA T_c AND LOSS RATE DATA (AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	0.55	0.42	0.100	76	5.06

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.42

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF (CFS) = 2.09

TOTAL AREA (ACRES) = 0.55 PEAK FLOW RATE (CFS) = 2.09

FLOW PROCESS FROM NODE 101.00 TO NODE 102.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM (FEET) = 3625.80 DOWNSTREAM (FEET) = 3625.00

FLOW LENGTH (FEET) = 20.00 MANNING'S N = 0.013

DEPTH OF FLOW IN 9.0 INCH PIPE IS 5.4 INCHES

PIPE-FLOW VELOCITY (FEET/SEC.) = 7.61

ESTIMATED PIPE DIAMETER (INCH) = 9.00 NUMBER OF PIPES = 1

PIPE-FLOW (CFS) = 2.09

PIPE TRAVEL TIME (MIN.) = 0.04 T_c (MIN.) = 5.11

LONGEST FLOWPATH FROM NODE 100.00 TO NODE 102.00 = 180.00 FEET.

AREA B	
PROPOSED 100-YEAR STORM EVENT	
KILGALLON INDUSTRIAL	

FLOW PROCESS FROM NODE 200.00 TO NODE 201.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<

>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH (FEET) = 315.00

ELEVATION DATA: UPSTREAM (FEET) = 3631.50 DOWNSTREAM (FEET) = 3625.00

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 6.596

* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 4.116

SUBAREA T_c AND LOSS RATE DATA (AMC III):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	F_p (INCH/HR)	A_p (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	B	2.13	0.42	0.100	76	6.60

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.42

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF (CFS) = 7.81

TOTAL AREA (ACRES) = 2.13 PEAK FLOW RATE (CFS) = 7.81

FLOW PROCESS FROM NODE 201.00 TO NODE 202.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 3620.00 DOWNSTREAM(FEET) = 3618.00
FLOW LENGTH(FEET) = 10.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 12.0 INCH PIPE IS 6.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 19.40
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 7.81
PIPE TRAVEL TIME(MIN.) = 0.01 Tc(MIN.) = 6.60
LONGEST FLOWPATH FROM NODE 200.00 TO NODE 202.00 = 325.00 FEET.

+-----+
| AREA C |
| PROPOSED 100-YEAR STORM EVENT |
| KILGALLON INDUSTRIAL |
+-----+

FLOW PROCESS FROM NODE 300.00 TO NODE 301.00 IS CODE = 21

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH(FEET) = 255.00
ELEVATION DATA: UPSTREAM(FEET) = 3634.00 DOWNSTREAM(FEET) = 3630.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 6.403
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 4.135
SUBAREA Tc AND LOSS RATE DATA(AMC III):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
COMMERCIAL B 5.21 0.42 0.100 76 6.40
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.42
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA RUNOFF(CFS) = 19.19
TOTAL AREA(ACRES) = 5.21 PEAK FLOW RATE(CFS) = 19.19

FLOW PROCESS FROM NODE 301.00 TO NODE 302.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 3623.80 DOWNSTREAM(FEET) = 3620.00
FLOW LENGTH(FEET) = 555.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 27.0 INCH PIPE IS 18.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.78
ESTIMATED PIPE DIAMETER(INCH) = 27.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 19.19
PIPE TRAVEL TIME(MIN.) = 1.37 Tc(MIN.) = 7.77
LONGEST FLOWPATH FROM NODE 300.00 TO NODE 302.00 = 810.00 FEET.

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 5.2 TC(MIN.) = 7.77
EFFECTIVE AREA(ACRES) = 5.21 AREA-AVERAGED Fm(INCH/HR) = 0.04
AREA-AVERAGED Fp(INCH/HR) = 0.42 AREA-AVERAGED Ap = 0.100
PEAK FLOW RATE(CFS) = 19.19

END OF RATIONAL METHOD ANALYSIS

SMALL AREA UNIT HYDROGRAPH MODEL

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Analysis prepared by:

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Problem Descriptions:

AREA A
PROP 100

RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90
TOTAL CATCHMENT AREA(ACRES) = 0.55
SOIL-LOSS RATE, Fm, (INCH/HR) = 0.152
LOW LOSS FRACTION = 0.174
TIME OF CONCENTRATION(MIN.) = 5.11
SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
USER SPECIFIED RAINFALL VALUES ARE USED
RETURN FREQUENCY(YEARS) = 100
5-MINUTE POINT RAINFALL VALUE(INCHES) = 0.36
30-MINUTE POINT RAINFALL VALUE(INCHES) = 0.93
1-HOUR POINT RAINFALL VALUE(INCHES) = 1.32
3-HOUR POINT RAINFALL VALUE(INCHES) = 2.20
6-HOUR POINT RAINFALL VALUE(INCHES) = 3.11
24-HOUR POINT RAINFALL VALUE(INCHES) = 6.42

TOTAL CATCHMENT RUNOFF VOLUME (ACRE-FEET) = 0.22
TOTAL CATCHMENT SOIL-LOSS VOLUME (ACRE-FEET) = 0.07

TIME	VOLUME	Q	0.	2.5	5.0	7.5
10.0						
(HOURS)	(AF)	(CFS)				
0.07	0.0002	0.06				
Q	.	.	.	.	.	.
0.16	0.0006	0.06				
Q	.	.	.	.	.	.
0.24	0.0010	0.06				
Q	.	.	.	.	.	.
0.33	0.0014	0.06				
Q	.	.	.	.	.	.
0.41	0.0018	0.06				
Q	.	.	.	.	.	.
0.50	0.0022	0.06				
Q	.	.	.	.	.	.
0.58	0.0026	0.06				
Q	.	.	.	.	.	.
0.67	0.0030	0.06				
Q	.	.	.	.	.	.
0.76	0.0034	0.06				
Q	.	.	.	.	.	.
0.84	0.0038	0.06				
Q	.	.	.	.	.	.
0.93	0.0043	0.06				
Q	.	.	.	.	.	.
1.01	0.0047	0.06				
Q	.	.	.	.	.	.
1.10	0.0051	0.06				
Q	.	.	.	.	.	.
1.18	0.0055	0.06				
Q	.	.	.	.	.	.
1.27	0.0059	0.06				
Q	.	.	.	.	.	.
1.35	0.0063	0.06				
Q	.	.	.	.	.	.
1.44	0.0068	0.06				
Q	.	.	.	.	.	.
1.52	0.0072	0.06				
Q	.	.	.	.	.	.
1.61	0.0076	0.06				
Q	.	.	.	.	.	.
1.69	0.0080	0.06				
Q	.	.	.	.	.	.

	1.78	0.0084	0.06		
Q	1.86	0.0089	0.06	.	.
Q	1.95	0.0093	0.06	.	.
Q	2.03	0.0097	0.06	.	.
Q	2.12	0.0101	0.06	.	.
Q	2.20	0.0106	0.06	.	.
Q	2.29	0.0110	0.06	.	.
Q	2.37	0.0114	0.06	.	.
Q	2.46	0.0119	0.06	.	.
Q	2.54	0.0123	0.06	.	.
Q	2.63	0.0128	0.06	.	.
Q	2.71	0.0132	0.06	.	.
Q	2.80	0.0136	0.06	.	.
Q	2.88	0.0141	0.06	.	.
Q	2.97	0.0145	0.06	.	.
Q	3.05	0.0150	0.06	.	.
Q	3.14	0.0154	0.06	.	.
Q	3.22	0.0158	0.06	.	.
Q	3.31	0.0163	0.06	.	.
Q	3.40	0.0167	0.06	.	.
Q	3.48	0.0172	0.06	.	.
Q	3.57	0.0176	0.06	.	.
Q	3.65	0.0181	0.06	.	.
Q	3.74	0.0186	0.06	.	.
Q	3.82	0.0190	0.06	.	.
Q	3.91	0.0195	0.07	.	.
Q	.	.	.	.	.

	3.99		0.0199		0.07		
Q		.		.		.	.
	4.08		0.0204		0.07		
Q		.		.		.	.
	4.16		0.0209		0.07		
Q		.		.		.	.
	4.25		0.0213		0.07		
Q		.		.		.	.
	4.33		0.0218		0.07		
Q		.		.		.	.
	4.42		0.0222		0.07		
Q		.		.		.	.
	4.50		0.0227		0.07		
Q		.		.		.	.
	4.59		0.0232		0.07		
Q		.		.		.	.
	4.67		0.0237		0.07		
Q		.		.		.	.
	4.76		0.0241		0.07		
Q		.		.		.	.
	4.84		0.0246		0.07		
Q		.		.		.	.
	4.93		0.0251		0.07		
Q		.		.		.	.
	5.01		0.0256		0.07		
Q		.		.		.	.
	5.10		0.0260		0.07		
Q		.		.		.	.
	5.18		0.0265		0.07		
Q		.		.		.	.
	5.27		0.0270		0.07		
Q		.		.		.	.
	5.35		0.0275		0.07		
Q		.		.		.	.
	5.44		0.0280		0.07		
Q		.		.		.	.
	5.52		0.0285		0.07		
Q		.		.		.	.
	5.61		0.0290		0.07		
Q		.		.		.	.
	5.69		0.0295		0.07		
Q		.		.		.	.
	5.78		0.0300		0.07		
Q		.		.		.	.
	5.87		0.0305		0.07		
Q		.		.		.	.
	5.95		0.0310		0.07		
Q		.		.		.	.
	6.04		0.0315		0.07		
Q		.		.		.	.
	6.12		0.0320		0.07		
Q		.		.		.	.

	6.21		0.0325		0.07		
Q		.		.		.	.
	6.29		0.0330		0.07		
Q		.		.		.	.
	6.38		0.0335		0.07		
Q		.		.		.	.
	6.46		0.0340		0.07		
Q		.		.		.	.
	6.55		0.0345		0.07		
Q		.		.		.	.
	6.63		0.0350		0.07		
Q		.		.		.	.
	6.72		0.0356		0.07		
Q		.		.		.	.
	6.80		0.0361		0.07		
Q		.		.		.	.
	6.89		0.0366		0.07		
Q		.		.		.	.
	6.97		0.0371		0.07		
Q		.		.		.	.
	7.06		0.0376		0.08		
Q		.		.		.	.
	7.14		0.0382		0.08		
Q		.		.		.	.
	7.23		0.0387		0.08		
Q		.		.		.	.
	7.31		0.0392		0.08		
Q		.		.		.	.
	7.40		0.0398		0.08		
Q		.		.		.	.
	7.48		0.0403		0.08		
Q		.		.		.	.
	7.57		0.0409		0.08		
Q		.		.		.	.
	7.65		0.0414		0.08		
Q		.		.		.	.
	7.74		0.0420		0.08		
Q		.		.		.	.
	7.82		0.0425		0.08		
Q		.		.		.	.
	7.91		0.0431		0.08		
Q		.		.		.	.
	7.99		0.0436		0.08		
Q		.		.		.	.
	8.08		0.0442		0.08		
Q		.		.		.	.
	8.16		0.0447		0.08		
Q		.		.		.	.
	8.25		0.0453		0.08		
Q		.		.		.	.
	8.34		0.0459		0.08		
Q		.		.		.	.

	8.42	0.0464	0.08		
Q	8.51	0.0470	0.08	.	.
Q	8.59	0.0476	0.08	.	.
Q	8.68	0.0482	0.08	.	.
Q	8.76	0.0488	0.08	.	.
Q	8.85	0.0493	0.08	.	.
Q	8.93	0.0499	0.08	.	.
Q	9.02	0.0505	0.08	.	.
Q	9.10	0.0511	0.09	.	.
Q	9.19	0.0517	0.09	.	.
Q	9.27	0.0523	0.09	.	.
Q	9.36	0.0529	0.09	.	.
Q	9.44	0.0536	0.09	.	.
Q	9.53	0.0542	0.09	.	.
Q	9.61	0.0548	0.09	.	.
Q	9.70	0.0554	0.09	.	.
Q	9.78	0.0560	0.09	.	.
Q	9.87	0.0567	0.09	.	.
Q	9.95	0.0573	0.09	.	.
Q	10.04	0.0579	0.09	.	.
Q	10.12	0.0586	0.09	.	.
Q	10.21	0.0592	0.09	.	.
Q	10.29	0.0599	0.09	.	.
Q	10.38	0.0605	0.09	.	.
Q	10.46	0.0612	0.09	.	.
Q	10.55	0.0619	0.09	.	.
Q	.	.	.	.	.

	10.63	0.0625	0.10		
Q	10.72	0.0632	0.10	.	.
Q	10.80	0.0639	0.10	.	.
Q	10.89	0.0646	0.10	.	.
Q	10.98	0.0653	0.10	.	.
Q	11.06	0.0660	0.10	.	.
Q	11.15	0.0667	0.10	.	.
Q	11.23	0.0674	0.10	.	.
Q	11.32	0.0681	0.10	.	.
Q	11.40	0.0688	0.10	.	.
Q	11.49	0.0695	0.10	.	.
Q	11.57	0.0703	0.10	.	.
Q	11.66	0.0710	0.11	.	.
Q	11.74	0.0718	0.11	.	.
Q	11.83	0.0725	0.11	.	.
Q	11.91	0.0733	0.11	.	.
Q	12.00	0.0741	0.11	.	.
Q	12.08	0.0748	0.11	.	.
Q	12.17	0.0756	0.11	.	.
Q	12.25	0.0763	0.11	.	.
Q	12.34	0.0771	0.11	.	.
Q	12.42	0.0779	0.11	.	.
Q	12.51	0.0787	0.11	.	.
Q	12.59	0.0795	0.11	.	.
Q	12.68	0.0803	0.12	.	.
Q	12.76	0.0811	0.12	.	.
Q	.	.	.	.	.

	12.85	0.0819	0.12		
Q	12.93	0.0827	0.12	.	.
Q	13.02	0.0836	0.12	.	.
Q	13.10	0.0844	0.12	.	.
Q	13.19	0.0853	0.13	.	.
Q	13.27	0.0862	0.13	.	.
Q	13.36	0.0871	0.13	.	.
Q	13.45	0.0880	0.13	.	.
Q	13.53	0.0889	0.13	.	.
Q	13.62	0.0899	0.13	.	.
Q	13.70	0.0908	0.14	.	.
Q	13.79	0.0918	0.14	.	.
Q	13.87	0.0928	0.14	.	.
Q	13.96	0.0938	0.15	.	.
Q	14.04	0.0949	0.15	.	.
Q	14.13	0.0959	0.14	.	.
Q	14.21	0.0969	0.15	.	.
Q	14.30	0.0979	0.15	.	.
Q	14.38	0.0990	0.15	.	.
Q	14.47	0.1001	0.16	.	.
Q	14.55	0.1012	0.16	.	.
Q	14.64	0.1023	0.17	.	.
Q	14.72	0.1035	0.17	.	.
Q	14.81	0.1048	0.18	.	.
Q	14.89	0.1060	0.19	.	.
Q	14.98	0.1074	0.19	.	.
Q	.	.	.	.	.

	15.06	0.1088	0.20		
Q	15.15	0.1102	0.21	.	.
Q	15.23	0.1117	0.22	.	.
Q	15.32	0.1133	0.23	.	.
Q	15.40	0.1151	.	.	.
0.27 .Q	15.49	0.1171	.	.	.
0.29 .Q	15.57	0.1192	.	.	.
0.32 .Q	15.66	0.1215	.	.	.
0.34 .Q	15.74	0.1242	.	.	.
0.43 .Q	15.83	0.1274	.	.	.
0.49 .Q	15.91	0.1315	0.66	.	.
Q	16.00	0.1369	0.87	.	.
Q	16.09	0.1471	2.02	.	.
Q	16.17	0.1561	0.56	.	.
Q	16.26	0.1594	.	.	.
0.37 .Q	16.34	0.1617	.	.	.
0.30 .Q	16.43	0.1636	0.24	.	.
Q	16.51	0.1652	0.22	.	.
Q	16.60	0.1667	0.20	.	.
Q	16.68	0.1680	0.18	.	.
Q	16.77	0.1693	0.17	.	.
Q	16.85	0.1704	0.16	.	.
Q	16.94	0.1715	0.15	.	.
Q	17.02	0.1725	0.14	.	.
Q	17.11	0.1736	0.15	.	.
Q	17.19	0.1746	0.14	.	.
Q	.	.	.	.	.

	17.28	0.1755	0.14	
Q	17.36	0.1765	0.13	.
Q	17.45	0.1774	0.13	.
Q	17.53	0.1783	0.12	.
Q	17.62	0.1791	0.12	.
Q	17.70	0.1800	0.12	.
Q	17.79	0.1808	0.11	.
Q	17.87	0.1816	0.11	.
Q	17.96	0.1824	0.11	.
Q	18.04	0.1831	0.11	.
Q	18.13	0.1839	0.11	.
Q	18.21	0.1846	0.11	.
Q	18.30	0.1854	0.11	.
Q	18.38	0.1861	0.10	.
Q	18.47	0.1868	0.10	.
Q	18.56	0.1876	0.10	.
Q	18.64	0.1883	0.10	.
Q	18.73	0.1889	0.10	.
Q	18.81	0.1896	0.10	.
Q	18.90	0.1903	0.09	.
Q	18.98	0.1909	0.09	.
Q	19.07	0.1916	0.09	.
Q	19.15	0.1922	0.09	.
Q	19.24	0.1929	0.09	.
Q	19.32	0.1935	0.09	.
Q	19.41	0.1941	0.09	.
Q	.	.	.	.

	19.49	0.1947	0.09		
Q	19.58	0.1953	0.08	.	.
Q	19.66	0.1959	0.08	.	.
Q	19.75	0.1965	0.08	.	.
Q	19.83	0.1971	0.08	.	.
Q	19.92	0.1976	0.08	.	.
Q	20.00	0.1982	0.08	.	.
Q	20.09	0.1988	0.08	.	.
Q	20.17	0.1993	0.08	.	.
Q	20.26	0.1999	0.08	.	.
Q	20.34	0.2004	0.08	.	.
Q	20.43	0.2010	0.08	.	.
Q	20.51	0.2015	0.08	.	.
Q	20.60	0.2020	0.08	.	.
Q	20.68	0.2026	0.07	.	.
Q	20.77	0.2031	0.07	.	.
Q	20.85	0.2036	0.07	.	.
Q	20.94	0.2041	0.07	.	.
Q	21.02	0.2046	0.07	.	.
Q	21.11	0.2051	0.07	.	.
Q	21.20	0.2056	0.07	.	.
Q	21.28	0.2061	0.07	.	.
Q	21.37	0.2066	0.07	.	.
Q	21.45	0.2071	0.07	.	.
Q	21.54	0.2076	0.07	.	.
Q	21.62	0.2081	0.07	.	.
Q	.	.	.	.	.

	21.71	0.2085	0.07		
Q	21.79	0.2090	0.07	.	.
Q	21.88	0.2095	0.07	.	.
Q	21.96	0.2099	0.07	.	.
Q	22.05	0.2104	0.07	.	.
Q	22.13	0.2109	0.07	.	.
Q	22.22	0.2113	0.06	.	.
Q	22.30	0.2118	0.06	.	.
Q	22.39	0.2122	0.06	.	.
Q	22.47	0.2127	0.06	.	.
Q	22.56	0.2131	0.06	.	.
Q	22.64	0.2136	0.06	.	.
Q	22.73	0.2140	0.06	.	.
Q	22.81	0.2145	0.06	.	.
Q	22.90	0.2149	0.06	.	.
Q	22.98	0.2153	0.06	.	.
Q	23.07	0.2158	0.06	.	.
Q	23.15	0.2162	0.06	.	.
Q	23.24	0.2166	0.06	.	.
Q	23.32	0.2170	0.06	.	.
Q	23.41	0.2174	0.06	.	.
Q	23.49	0.2179	0.06	.	.
Q	23.58	0.2183	0.06	.	.
Q	23.67	0.2187	0.06	.	.
Q	23.75	0.2191	0.06	.	.
Q	23.84	0.2195	0.06	.	.
Q	.	.	.	.	.

	23.92		0.2199		0.06		
Q		.		.		.	.
	24.01		0.2203		0.06		
Q		.		.		.	.
	24.09		0.2205		0.00		
Q		.		.		.	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
 (Note: 100% of Peak Flow Rate estimate assumed to have
 an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
=====	=====
0%	1441.0
10%	92.0
20%	30.7
30%	15.3
40%	10.2
50%	5.1
60%	5.1
70%	5.1
80%	5.1
90%	5.1

SMALL AREA UNIT HYDROGRAPH MODEL

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Problem Descriptions:
AREA B
PROP 100-YEAR HYDRO

RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90
TOTAL CATCHMENT AREA(ACRES) = 2.13
SOIL-LOSS RATE, Fm, (INCH/HR) = 0.059
LOW LOSS FRACTION = 0.090
TIME OF CONCENTRATION(MIN.) = 6.60
SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
USER SPECIFIED RAINFALL VALUES ARE USED
RETURN FREQUENCY(YEARS) = 100
5-MINUTE POINT RAINFALL VALUE(INCHES) = 0.36
30-MINUTE POINT RAINFALL VALUE(INCHES) = 0.93
1-HOUR POINT RAINFALL VALUE(INCHES) = 1.32
3-HOUR POINT RAINFALL VALUE(INCHES) = 2.20
6-HOUR POINT RAINFALL VALUE(INCHES) = 3.11
24-HOUR POINT RAINFALL VALUE(INCHES) = 6.42

TOTAL CATCHMENT RUNOFF VOLUME (ACRE-FEET) = 0.94
 TOTAL CATCHMENT SOIL-LOSS VOLUME (ACRE-FEET) = 0.20

TIME	VOLUME	Q	0.	2.5	5.0	7.5
10.0						
(HOURS)	(AF)	(CFS)				
0.05	0.0005	0.24				
Q	.	.	.	.	.	.
0.16	0.0027	0.24				
Q	.	.	.	.	.	.
0.27	0.0050	0.25				
Q	.	.	.	.	.	.
0.38	0.0072	0.25				
Q	.	.	.	.	.	.
0.49	0.0094	0.25				
Q	.	.	.	.	.	.
0.60	0.0117	0.25				
Q	.	.	.	.	.	.
0.71	0.0139	0.25				
Q	.	.	.	.	.	.
0.82	0.0162	0.25				
Q	.	.	.	.	.	.
0.93	0.0185					
0.25 .Q	.	.	.	.	.	.
1.04	0.0207					
0.25 .Q	.	.	.	.	.	.
1.15	0.0230					
0.25 .Q	.	.	.	.	.	.
1.26	0.0253					
0.25 .Q	.	.	.	.	.	.
1.37	0.0276					
0.25 .Q	.	.	.	.	.	.
1.48	0.0299					
0.25 .Q	.	.	.	.	.	.
1.59	0.0323					
0.26 .Q	.	.	.	.	.	.
1.70	0.0346					
0.26 .Q	.	.	.	.	.	.
1.81	0.0369					
0.26 .Q	.	.	.	.	.	.
1.92	0.0393					
0.26 .Q	.	.	.	.	.	.
2.03	0.0416					
0.26 .Q	.	.	.	.	.	.
2.14	0.0440					
0.26 .Q	.	.	.	.	.	.

2.25	0.0464			
0.26 .Q	.	.	.	.
2.36	0.0487			
0.26 .Q	.	.	.	.
2.47	0.0511			
0.26 .Q	.	.	.	.
2.58	0.0535			
0.26 .Q	.	.	.	.
2.69	0.0559			
0.27 .Q	.	.	.	.
2.80	0.0584			
0.27 .Q	.	.	.	.
2.91	0.0608			
0.27 .Q	.	.	.	.
3.02	0.0632			
0.27 .Q	.	.	.	.
3.13	0.0657			
0.27 .Q	.	.	.	.
3.24	0.0681			
0.27 .Q	.	.	.	.
3.35	0.0706			
0.27 .Q	.	.	.	.
3.46	0.0731			
0.27 .Q	.	.	.	.
3.57	0.0756			
0.27 .Q	.	.	.	.
3.68	0.0781			
0.28 .Q	.	.	.	.
3.79	0.0806			
0.28 .Q	.	.	.	.
3.90	0.0831			
0.28 .Q	.	.	.	.
4.01	0.0856			
0.28 .Q	.	.	.	.
4.12	0.0882			
0.28 .Q	.	.	.	.
4.23	0.0907			
0.28 .Q	.	.	.	.
4.34	0.0933			
0.28 .Q	.	.	.	.
4.45	0.0959			
0.28 .Q	.	.	.	.
4.56	0.0984			
0.29 .Q	.	.	.	.
4.67	0.1010			
0.29 .Q	.	.	.	.
4.78	0.1037			
0.29 .Q	.	.	.	.
4.89	0.1063			
0.29 .Q	.	.	.	.
5.00	0.1089			
0.29 .Q	.	.	.	.

5.11	0.1116			
0.29 .Q	.	.	.	.
5.22	0.1142			
0.29 .Q	.	.	.	.
5.33	0.1169			
0.30 .Q	.	.	.	.
5.44	0.1196			
0.30 .Q	.	.	.	.
5.55	0.1223			
0.30 .Q	.	.	.	.
5.66	0.1250			
0.30 .Q	.	.	.	.
5.77	0.1277			
0.30 .Q	.	.	.	.
5.88	0.1305			
0.30 .Q	.	.	.	.
5.99	0.1332			
0.30 .Q	.	.	.	.
6.10	0.1360			
0.31 .Q	.	.	.	.
6.21	0.1388			
0.31 .Q	.	.	.	.
6.32	0.1416			
0.31 .Q	.	.	.	.
6.43	0.1444			
0.31 .Q	.	.	.	.
6.54	0.1472			
0.31 .Q	.	.	.	.
6.65	0.1501			
0.31 .Q	.	.	.	.
6.76	0.1529			
0.32 .Q	.	.	.	.
6.87	0.1558			
0.32 .Q	.	.	.	.
6.98	0.1587			
0.32 .Q	.	.	.	.
7.09	0.1616			
0.32 .Q	.	.	.	.
7.20	0.1645			
0.32 .Q	.	.	.	.
7.31	0.1675			
0.33 .Q	.	.	.	.
7.42	0.1704			
0.33 .Q	.	.	.	.
7.53	0.1734			
0.33 .Q	.	.	.	.
7.64	0.1764			
0.33 .Q	.	.	.	.
7.75	0.1794			
0.33 .Q	.	.	.	.
7.86	0.1825			
0.33 .Q	.	.	.	.

7.97	0.1855			
0.34 .Q	.	.	.	.
8.08	0.1886			
0.34 .Q	.	.	.	.
8.19	0.1917			
0.34 .Q	.	.	.	.
8.30	0.1948			
0.34 .Q	.	.	.	.
8.41	0.1979			
0.35 .Q	.	.	.	.
8.52	0.2011			
0.35 .Q	.	.	.	.
8.63	0.2043			
0.35 .Q	.	.	.	.
8.74	0.2075			
0.35 .Q	.	.	.	.
8.85	0.2107			
0.36 .Q	.	.	.	.
8.96	0.2140			
0.36 .Q	.	.	.	.
9.07	0.2172			
0.36 .Q	.	.	.	.
9.18	0.2205			
0.36 .Q	.	.	.	.
9.29	0.2239			
0.37 .Q	.	.	.	.
9.40	0.2272			
0.37 .Q	.	.	.	.
9.51	0.2306			
0.37 .Q	.	.	.	.
9.62	0.2340			
0.38 .Q	.	.	.	.
9.73	0.2374			
0.38 .Q	.	.	.	.
9.84	0.2409			
0.38 .Q	.	.	.	.
9.95	0.2444			
0.39 .Q	.	.	.	.
10.06	0.2479			
0.39 .Q	.	.	.	.
10.17	0.2514			
0.39 .Q	.	.	.	.
10.28	0.2550			
0.39 .Q	.	.	.	.
10.39	0.2586			
0.40 .Q	.	.	.	.
10.50	0.2623			
0.40 .Q	.	.	.	.
10.61	0.2659			
0.41 .Q	.	.	.	.
10.72	0.2697			
0.41 .Q	.	.	.	.

10.83	0.2734			
0.42 .Q	.	.	.	.
10.94	0.2772			
0.42 .Q	.	.	.	.
11.05	0.2810			
0.42 .Q	.	.	.	.
11.16	0.2849			
0.43 .Q	.	.	.	.
11.27	0.2888			
0.43 .Q	.	.	.	.
11.38	0.2928			
0.44 .Q	.	.	.	.
11.49	0.2968			
0.44 .Q	.	.	.	.
11.60	0.3008			
0.45 .Q	.	.	.	.
11.71	0.3049			
0.45 .Q	.	.	.	.
11.82	0.3090			
0.46 .Q	.	.	.	.
11.93	0.3132			
0.46 .Q	.	.	.	.
12.04	0.3175			
0.47 .Q	.	.	.	.
12.15	0.3217			
0.46 .Q	.	.	.	.
12.26	0.3258			
0.46 .Q	.	.	.	.
12.37	0.3301			
0.47 .Q	.	.	.	.
12.48	0.3344			
0.47 .Q	.	.	.	.
12.59	0.3387			
0.48 .Q	.	.	.	.
12.70	0.3431			
0.49 .Q	.	.	.	.
12.81	0.3476	0.50	.	.
Q	.	.	.	.
12.92	0.3522	0.51	.	.
Q	.	.	.	.
13.03	0.3569	0.52	.	.
Q	.	.	.	.
13.14	0.3616	0.52	.	.
Q	.	.	.	.
13.25	0.3664	0.54	.	.
Q	.	.	.	.
13.36	0.3713	0.54	.	.
Q	.	.	.	.
13.47	0.3764	0.56	.	.
Q	.	.	.	.
13.58	0.3815	0.57	.	.
Q	.	.	.	.

	13.69	0.3867	0.59	.		
Q	.	.	.		.	
	13.80	0.3921	0.59	.		
Q	.	.	.		.	
	13.91	0.3976	0.61	.		
Q	.	.	.		.	
	14.02	0.4032	0.62	.		
Q	.	.	.		.	
	14.13	0.4088	0.60	.		
Q	.	.	.		.	
	14.24	0.4144	0.62	.		
Q	.	.	.		.	
	14.35	0.4201	0.64	.		
Q	.	.	.		.	
	14.46	0.4260	0.66	.		
Q	.	.	.		.	
	14.57	0.4322	0.69	.		
Q	.	.	.		.	
	14.68	0.4385	0.71	.		
Q	.	.	.		.	
	14.79	0.4452	0.75	.		
Q	.	.	.		.	
	14.90	0.4522	0.78	.		
Q	.	.	.		.	
	15.01	0.4595	0.83	.		
Q	.	.	.		.	
	15.12	0.4672	0.87	.		
Q	.	.	.		.	
	15.23	0.4755	0.94	.		
Q	.	.	.		.	
	15.34	0.4843	0.99	.		
Q	.	.	.		.	
	15.45	0.4942	1.20	.		
Q	.	.	.		.	
	15.56	0.5055	1.29	.		
Q	.	.	.		.	
	15.67	0.5183	1.52	.		
Q	.	.	.		.	
	15.78	0.5332	1.76	.		
Q	.	.	.		.	
	15.89	0.5523	2.43	.		
Q	.	.	.		.	
	16.00	0.5776	3.14	.		.
Q	.	.	.		.	
	16.11	0.6240	7.09	.		.
Q	.	.	.		.	
	16.22	0.6656	2.06	.		
Q	.	.	.		.	
	16.33	0.6813	1.39	.		
Q	.	.	.		.	
	16.44	0.6924	1.05	.		
Q	.	.	.		.	

16.55	0.7013	0.90	.		
Q 16.66	0.7090	0.80	.	.	
Q 16.77	0.7160	0.73	.	.	
Q 16.88	0.7224	0.68	.	.	
Q 16.99	0.7284	0.63	.	.	
Q 17.10	0.7341	0.62	.	.	
Q 17.21	0.7396	0.60	.	.	
Q 17.32	0.7450	0.58	.	.	
Q 17.43	0.7501	0.55	.	.	
Q 17.54	0.7551	0.53	.	.	
Q 17.65	0.7598	0.51	.	.	
Q 17.76	0.7644	.	.	.	
0.49 .Q 17.87	0.7688	.	.	.	
0.48 .Q 17.98	0.7731	.	.	.	
0.46 .Q 18.09	0.7773	.	.	.	
0.46 .Q 18.20	0.7815	.	.	.	
0.46 .Q 18.31	0.7856	.	.	.	
0.45 .Q 18.42	0.7897	.	.	.	
0.44 .Q 18.53	0.7936	.	.	.	
0.43 .Q 18.64	0.7975	.	.	.	
0.42 .Q 18.75	0.8013	.	.	.	
0.41 .Q 18.86	0.8050	.	.	.	
0.40 .Q 18.97	0.8087	.	.	.	
0.40 .Q 19.08	0.8122	.	.	.	
0.39 .Q 19.19	0.8158	.	.	.	
0.38 .Q 19.30	0.8192	.	.	.	
0.38 .Q	.	.	.	.	

19.41	0.8226			
0.37 .Q	.	.	.	.
19.52	0.8260			
0.37 .Q	.	.	.	.
19.63	0.8293			
0.36 .Q	.	.	.	.
19.74	0.8325			
0.35 .Q	.	.	.	.
19.85	0.8357			
0.35 .Q	.	.	.	.
19.96	0.8389			
0.35 .Q	.	.	.	.
20.07	0.8420			
0.34 .Q	.	.	.	.
20.18	0.8451			
0.34 .Q	.	.	.	.
20.29	0.8481			
0.33 .Q	.	.	.	.
20.40	0.8511			
0.33 .Q	.	.	.	.
20.51	0.8541			
0.32 .Q	.	.	.	.
20.62	0.8570			
0.32 .Q	.	.	.	.
20.73	0.8599			
0.32 .Q	.	.	.	.
20.84	0.8627			
0.31 .Q	.	.	.	.
20.95	0.8656			
0.31 .Q	.	.	.	.
21.06	0.8684			
0.31 .Q	.	.	.	.
21.17	0.8711			
0.30 .Q	.	.	.	.
21.28	0.8739			
0.30 .Q	.	.	.	.
21.39	0.8766			
0.30 .Q	.	.	.	.
21.50	0.8793			
0.29 .Q	.	.	.	.
21.61	0.8819			
0.29 .Q	.	.	.	.
21.72	0.8846			
0.29 .Q	.	.	.	.
21.83	0.8872			
0.29 .Q	.	.	.	.
21.94	0.8898			
0.28 .Q	.	.	.	.
22.05	0.8923			
0.28 .Q	.	.	.	.
22.16	0.8949			
0.28 .Q	.	.	.	.

22.27	0.8974			
0.28 .Q	.	.	.	.
22.38	0.8999			
0.27 .Q	.	.	.	.
22.49	0.9024			
0.27 .Q	.	.	.	.
22.60	0.9048			
0.27 .Q	.	.	.	.
22.71	0.9073			
0.27 .Q	.	.	.	.
22.82	0.9097			
0.26 .Q	.	.	.	.
22.93	0.9121			
0.26 .Q	.	.	.	.
23.04	0.9145			
0.26 .Q	.	.	.	.
23.15	0.9168			
0.26 .Q	.	.	.	.
23.26	0.9192			
0.26 .Q	.	.	.	.
23.37	0.9215			
0.26 .Q	.	.	.	.
23.48	0.9238			
0.25 .Q	.	.	.	.
23.59	0.9261			
0.25 .Q	.	.	.	.
23.70	0.9284	0.25		
Q	.	.	.	.
23.81	0.9307	0.25		
Q	.	.	.	.
23.92	0.9329	0.25		
Q	.	.	.	.
24.03	0.9351	0.24		
Q	.	.	.	.
24.14	0.9363	0.00		
Q	.	.	.	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
 (Note: 100% of Peak Flow Rate estimate assumed to have
 an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
=====	=====
0%	1445.4
10%	132.0
20%	39.6
30%	19.8
40%	13.2

50%	6.6
60%	6.6
70%	6.6
80%	6.6
90%	6.6

SMALL AREA UNIT HYDROGRAPH MODEL

=====
=====

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Ver. 22.0 Release Date: 07/01/2015 License ID 1510

Analysis prepared by:

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Problem Descriptions:

AREA C
PROP 100-YEAR HYDRO

RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90
TOTAL CATCHMENT AREA(ACRES) = 5.21
SOIL-LOSS RATE, Fm, (INCH/HR) = 0.025
LOW LOSS FRACTION = 0.060
TIME OF CONCENTRATION(MIN.) = 7.77
SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
USER SPECIFIED RAINFALL VALUES ARE USED
RETURN FREQUENCY(YEARS) = 100
5-MINUTE POINT RAINFALL VALUE(INCHES) = 0.36
30-MINUTE POINT RAINFALL VALUE(INCHES) = 0.93
1-HOUR POINT RAINFALL VALUE(INCHES) = 1.32
3-HOUR POINT RAINFALL VALUE(INCHES) = 2.20
6-HOUR POINT RAINFALL VALUE(INCHES) = 3.11
24-HOUR POINT RAINFALL VALUE(INCHES) = 6.42

TOTAL CATCHMENT RUNOFF VOLUME (ACRE-FEET) = 2.36
TOTAL CATCHMENT SOIL-LOSS VOLUME (ACRE-FEET) = 0.42

TIME	VOLUME	Q	0.	5.0	10.0	15.0
(HOURS)	(AF)	(CFS)				
20.0						
0.07	0.0018					
0.62 .Q	.	.	.	.	.	.
0.20	0.0084					
0.62 .Q	.	.	.	.	.	.
0.33	0.0151					
0.62 .Q	.	.	.	.	.	.
0.46	0.0217					
0.62 .Q	.	.	.	.	.	.
0.59	0.0284					
0.63 .Q	.	.	.	.	.	.
0.72	0.0351					
0.63 .Q	.	.	.	.	.	.
0.85	0.0418					
0.63 .Q	.	.	.	.	.	.
0.98	0.0486					
0.63 .Q	.	.	.	.	.	.
1.11	0.0554					
0.64 .Q	.	.	.	.	.	.
1.24	0.0622					
0.64 .Q	.	.	.	.	.	.
1.37	0.0691					
0.64 .Q	.	.	.	.	.	.
1.50	0.0759					
0.64 .Q	.	.	.	.	.	.
1.63	0.0828					
0.65 .Q	.	.	.	.	.	.
1.75	0.0898					
0.65 .Q	.	.	.	.	.	.
1.88	0.0967					
0.65 .Q	.	.	.	.	.	.
2.01	0.1037					
0.65 .Q	.	.	.	.	.	.
2.14	0.1107					
0.66 .Q	.	.	.	.	.	.
2.27	0.1178					
0.66 .Q	.	.	.	.	.	.
2.40	0.1249					
0.66 .Q	.	.	.	.	.	.
2.53	0.1320					
0.67 .Q	.	.	.	.	.	.

2.66	0.1392			
0.67 .Q	.	.	.	.
2.79	0.1463			
0.67 .Q	.	.	.	.
2.92	0.1536			
0.68 .Q	.	.	.	.
3.05	0.1608			
0.68 .Q	.	.	.	.
3.18	0.1681			
0.68 .Q	.	.	.	.
3.31	0.1754			
0.69 .Q	.	.	.	.
3.44	0.1828			
0.69 .Q	.	.	.	.
3.57	0.1902			
0.69 .Q	.	.	.	.
3.70	0.1976			
0.70 .Q	.	.	.	.
3.83	0.2051			
0.70 .Q	.	.	.	.
3.96	0.2126			
0.70 .Q	.	.	.	.
4.09	0.2201			
0.71 .Q	.	.	.	.
4.22	0.2277			
0.71 .Q	.	.	.	.
4.35	0.2353			
0.71 .Q	.	.	.	.
4.47	0.2430			
0.72 .Q	.	.	.	.
4.60	0.2507			
0.72 .Q	.	.	.	.
4.73	0.2584			
0.73 .Q	.	.	.	.
4.86	0.2662			
0.73 .Q	.	.	.	.
4.99	0.2740			
0.73 .Q	.	.	.	.
5.12	0.2819			
0.74 .Q	.	.	.	.
5.25	0.2898			
0.74 .Q	.	.	.	.
5.38	0.2978			
0.75 .Q	.	.	.	.
5.51	0.3058			
0.75 .Q	.	.	.	.
5.64	0.3138			
0.75 .Q	.	.	.	.
5.77	0.3219			
0.76 .Q	.	.	.	.
5.90	0.3301			
0.76 .Q	.	.	.	.

6.03	0.3383			
0.77 .Q	.	.	.	.
6.16	0.3466			
0.77 .Q	.	.	.	.
6.29	0.3549			
0.78 .Q	.	.	.	.
6.42	0.3632			
0.78 .Q	.	.	.	.
6.55	0.3716			
0.79 .Q	.	.	.	.
6.68	0.3801			
0.79 .Q	.	.	.	.
6.81	0.3886			
0.80 .Q	.	.	.	.
6.93	0.3972			
0.80 .Q	.	.	.	.
7.06	0.4058			
0.81 .Q	.	.	.	.
7.19	0.4145			
0.81 .Q	.	.	.	.
7.32	0.4232			
0.82 .Q	.	.	.	.
7.45	0.4321			
0.83 .Q	.	.	.	.
7.58	0.4409			
0.83 .Q	.	.	.	.
7.71	0.4499			
0.84 .Q	.	.	.	.
7.84	0.4589			
0.85 .Q	.	.	.	.
7.97	0.4680			
0.85 .Q	.	.	.	.
8.10	0.4771			
0.86 .Q	.	.	.	.
8.23	0.4863			
0.86 .Q	.	.	.	.
8.36	0.4956			
0.87 .Q	.	.	.	.
8.49	0.5050			
0.88 .Q	.	.	.	.
8.62	0.5144			
0.89 .Q	.	.	.	.
8.75	0.5239			
0.89 .Q	.	.	.	.
8.88	0.5335			
0.90 .Q	.	.	.	.
9.01	0.5432			
0.91 .Q	.	.	.	.
9.14	0.5530			
0.92 .Q	.	.	.	.
9.27	0.5628			
0.92 .Q	.	.	.	.

9.40	0.5728			
0.93 .Q	.	.	.	.
9.52	0.5828			
0.94 .Q	.	.	.	.
9.65	0.5929			
0.95 .Q	.	.	.	.
9.78	0.6031			
0.96 .Q	.	.	.	.
9.91	0.6135			
0.97 .Q	.	.	.	.
10.04	0.6239			
0.98 .Q	.	.	.	.
10.17	0.6344			
0.99 .Q	.	.	.	.
10.30	0.6451			
1.00 .Q	.	.	.	.
10.43	0.6558	1.01	.	
Q	.	.	.	.
10.56	0.6667	1.02	.	
Q	.	.	.	.
10.69	0.6777	1.04	.	
Q	.	.	.	.
10.82	0.6888	1.04	.	
Q	.	.	.	.
10.95	0.7001	1.06	.	
Q	.	.	.	.
11.08	0.7115	1.07	.	
Q	.	.	.	.
11.21	0.7230	1.09	.	
Q	.	.	.	.
11.34	0.7347	1.10	.	
Q	.	.	.	.
11.47	0.7465	1.12	.	
Q	.	.	.	.
11.60	0.7585	1.13	.	
Q	.	.	.	.
11.73	0.7707	1.15	.	
Q	.	.	.	.
11.86	0.7830	1.16	.	
Q	.	.	.	.
11.99	0.7955	1.18	.	
Q	.	.	.	.
12.12	0.8081	1.17	.	
Q	.	.	.	.
12.24	0.8206	1.16	.	
Q	.	.	.	.
12.37	0.8332	1.18	.	
Q	.	.	.	.
12.50	0.8459	1.21	.	
Q	.	.	.	.
12.63	0.8589	1.22	.	
Q	.	.	.	.

	12.76	0.8721	1.25	.		
Q	.	.	.		.	
	12.89	0.8856	1.27	.		
Q	.	.	.		.	
	13.02	0.8994	1.30	.		
Q	.	.	.		.	
	13.15	0.9134	1.32	.		
Q	.	.	.		.	
	13.28	0.9278	1.36	.		
Q	.	.	.		.	
	13.41	0.9425	1.38	.		
Q	.	.	.		.	
	13.54	0.9576	1.43	.		
Q	.	.	.		.	
	13.67	0.9730	1.46	.		
Q	.	.	.		.	
	13.80	0.9889	1.51	.		
Q	.	.	.		.	
	13.93	1.0052	1.54	.		
Q	.	.	.		.	
	14.06	1.0219	1.58	.		
Q	.	.	.		.	
	14.19	1.0385	1.53	.		
Q	.	.	.		.	
	14.32	1.0553	1.60	.		
Q	.	.	.		.	
	14.45	1.0727	1.65	.		
Q	.	.	.		.	
	14.58	1.0909	1.75	.		
Q	.	.	.		.	
	14.70	1.1099	1.80	.		
Q	.	.	.		.	
	14.83	1.1299	1.94	.		
Q	.	.	.		.	
	14.96	1.1510	2.02	.		
Q	.	.	.		.	
	15.09	1.1737	2.21	.		
Q	.	.	.		.	
	15.22	1.1979	2.33	.		
Q	.	.	.		.	
	15.35	1.2244	2.62	.		
Q	.	.	.		.	
	15.48	1.2543	2.97	.		
Q	.	.	.		.	
	15.61	1.2893	3.57	.		
Q	.	.	.		.	
	15.74	1.3296	3.96	.		
Q	.	.	.		.	
	15.87	1.3810				
5.65	.	.Q	.		.	.
	16.00	1.4500	7.25	.		.
Q	.	.	.			

	16.13	1.5756	16.22	.	.	.	.
Q	.						
	16.26	1.6878	4.76	.			
Q.	.			.			
	16.39	1.7308	3.27	.			
Q	.			.	.		
	16.52	1.7615	2.46	.			
Q	.			.	.		
	16.65	1.7860	2.11	.			
Q	.			.	.		
	16.78	1.8072	1.87	.			
Q	.			.	.		
	16.91	1.8263	1.70	.			
Q	.			.	.		
	17.04	1.8437	1.56	.			
Q	.			.	.		
	17.17	1.8605	1.57	.			
Q	.			.	.		
	17.30	1.8768	1.48	.			
Q	.			.	.		
	17.42	1.8923	1.41	.			
Q	.			.	.		
	17.55	1.9070	1.34	.			
Q	.			.	.		
	17.68	1.9210	1.29	.			
Q	.			.	.		
	17.81	1.9345	1.24	.			
Q	.			.	.		
	17.94	1.9475	1.19	.			
Q	.			.	.		
	18.07	1.9601	1.15	.			
Q	.			.	.		
	18.20	1.9725	1.17	.			
Q	.			.	.		
	18.33	1.9848	1.14	.			
Q	.			.	.		
	18.46	1.9968	1.11	.			
Q	.			.	.		
	18.59	2.0085	1.08	.			
Q	.			.	.		
	18.72	2.0199	1.05	.			
Q	.			.	.		
	18.85	2.0310	1.03	.			
Q	.			.	.		
	18.98	2.0419	1.01	.			
Q	.			.	.		
	19.11	2.0525					
0.98 .Q	.		.	.	.		
	19.24	2.0630					
0.96 .Q	.		.	.	.		
	19.37	2.0732					
0.95 .Q	.		.	.	.		

19.50	2.0832			
0.93 .Q	.	.	.	.
19.63	2.0931			
0.91 .Q	.	.	.	.
19.76	2.1027			
0.90 .Q	.	.	.	.
19.89	2.1123			
0.88 .Q	.	.	.	.
20.01	2.1216			
0.87 .Q	.	.	.	.
20.14	2.1308			
0.85 .Q	.	.	.	.
20.27	2.1399			
0.84 .Q	.	.	.	.
20.40	2.1489			
0.83 .Q	.	.	.	.
20.53	2.1577			
0.82 .Q	.	.	.	.
20.66	2.1664			
0.81 .Q	.	.	.	.
20.79	2.1749			
0.80 .Q	.	.	.	.
20.92	2.1834			
0.79 .Q	.	.	.	.
21.05	2.1918			
0.78 .Q	.	.	.	.
21.18	2.2000			
0.77 .Q	.	.	.	.
21.31	2.2082			
0.76 .Q	.	.	.	.
21.44	2.2162			
0.75 .Q	.	.	.	.
21.57	2.2242			
0.74 .Q	.	.	.	.
21.70	2.2321			
0.73 .Q	.	.	.	.
21.83	2.2398			
0.72 .Q	.	.	.	.
21.96	2.2475			
0.72 .Q	.	.	.	.
22.09	2.2552			
0.71 .Q	.	.	.	.
22.22	2.2627			
0.70 .Q	.	.	.	.
22.35	2.2702			
0.69 .Q	.	.	.	.
22.48	2.2776			
0.69 .Q	.	.	.	.
22.60	2.2849			
0.68 .Q	.	.	.	.
22.73	2.2921			
0.67 .Q	.	.	.	.

22.86	2.2993			
0.67 .Q	.	.	.	.
22.99	2.3064			
0.66 .Q	.	.	.	.
23.12	2.3135			
0.66 .Q	.	.	.	.
23.25	2.3205			
0.65 .Q	.	.	.	.
23.38	2.3274			
0.65 .Q	.	.	.	.
23.51	2.3343			
0.64 .Q	.	.	.	.
23.64	2.3411			
0.63 .Q	.	.	.	.
23.77	2.3479			
0.63 .Q	.	.	.	.
23.90	2.3546			
0.62 .Q	.	.	.	.
24.03	2.3612			
0.62 .Q	.	.	.	.
24.16	2.3646	0.00		
Q	.	.	.	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
 (Note: 100% of Peak Flow Rate estimate assumed to have
 an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
=====	=====
0%	1445.2
10%	155.4
20%	54.4
30%	23.3
40%	15.5
50%	7.8
60%	7.8
70%	7.8
80%	7.8
90%	7.8

APPENDIX D

San Bernardino County Hydrology Manual Calculations
WQMP Calculations

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
2	Manual	1.120	5	970	4,422	-----	-----	-----	AREA A 10-YEAR
3	Manual	0.000	5	n/a	0	-----	-----	-----	AREA A 100-YEAR
5	Manual	4.110	5	970	21,531	-----	-----	-----	AREA B 10-YEAR
6	Manual	0.000	5	n/a	0	-----	-----	-----	AREA B 100-YEAR
8	Manual	9.560	5	975	56,799	-----	-----	-----	AREA C 10-YEAR
9	Manual	0.000	5	n/a	0	-----	-----	-----	AREA C 100-YEAR
11	Reservoir	0.559	5	975	2,734	2	3626.19	2,116	AREA A 10-YEAR MIT
12	Reservoir	0.000	5	n/a	0	3	3625.00	0.000	AREA A 10-YEAR MIT
14	Reservoir	2.704	5	975	11,426	5	3621.90	11,218	AREA B 10-YEAR MIT
15	Reservoir	0.000	5	n/a	0	6	3613.50	0.000	AREA B 100-YEAR MIT
17	Reservoir	6.299	5	980	39,430	8	3623.54	21,898	AREA C 10-YEAR MIT
18	Reservoir	0.000	5	n/a	0	9	3616.00	0.000	AREA C 100-YEAR MIT
CG BASINS.gpw					Return Period: 10 Year			Thursday, 04 / 2 / 2020	

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

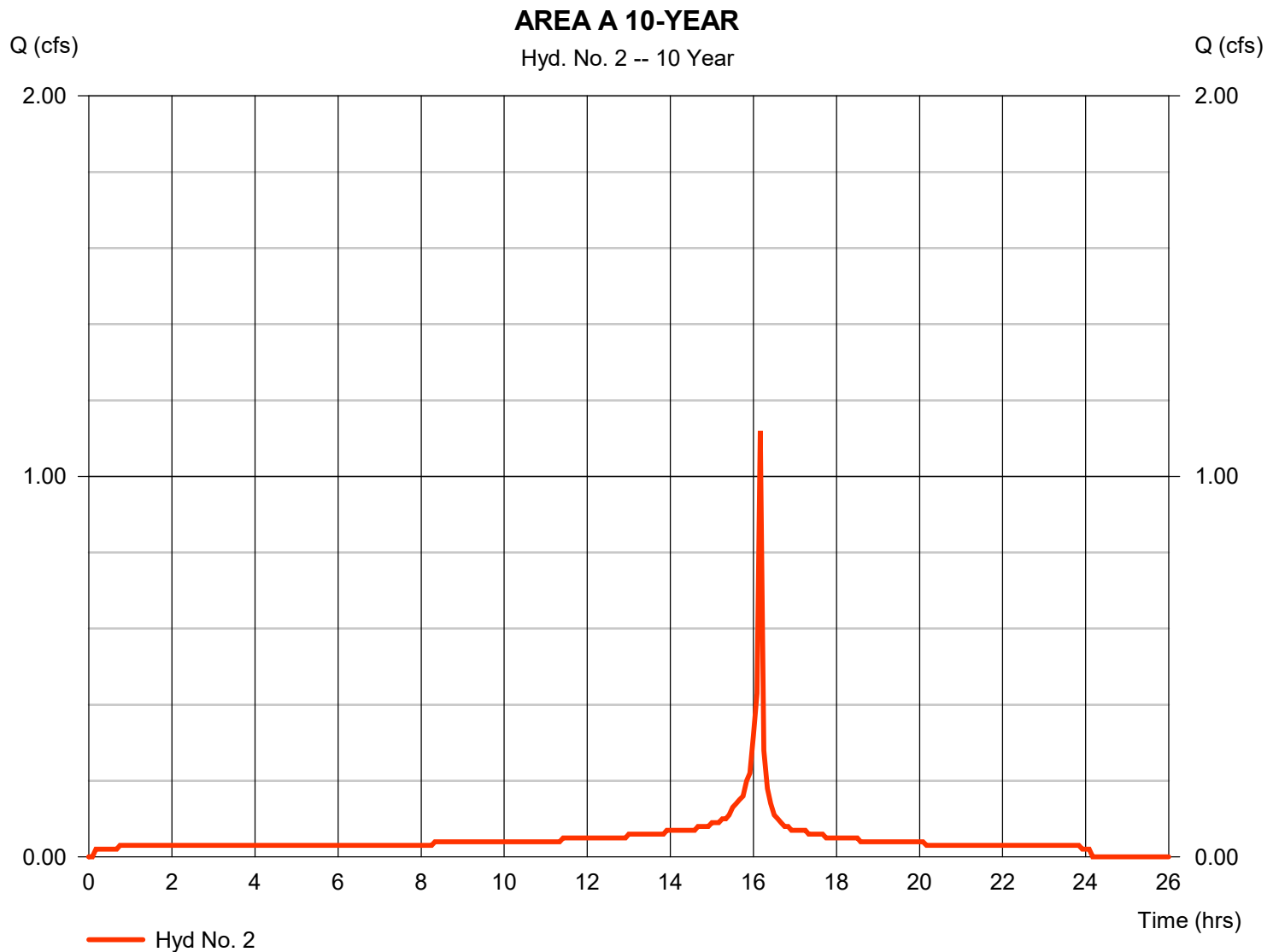
Thursday, 04 / 2 / 2020

Hyd. No. 2

AREA A 10-YEAR

Hydrograph type = Manual
Storm frequency = 10 yrs
Time interval = 5 min

Peak discharge = 1.120 cfs
Time to peak = 16.17 hrs
Hyd. volume = 4,422 cuft



Hydrograph Report

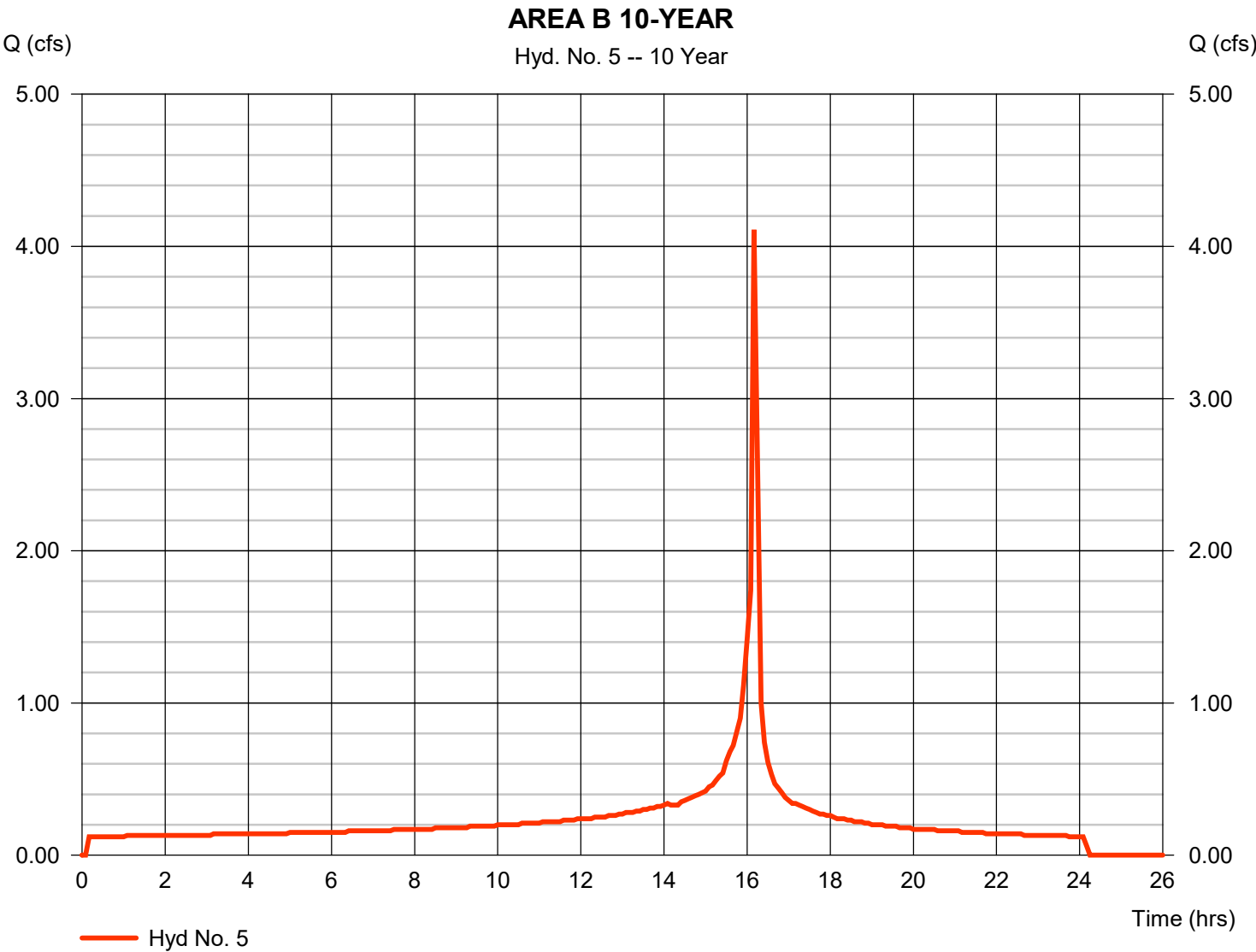
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

Thursday, 04 / 2 / 2020

Hyd. No. 5

AREA B 10-YEAR

Hydrograph type	= Manual	Peak discharge	= 4.110 cfs
Storm frequency	= 10 yrs	Time to peak	= 16.17 hrs
Time interval	= 5 min	Hyd. volume	= 21,531 cuft



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

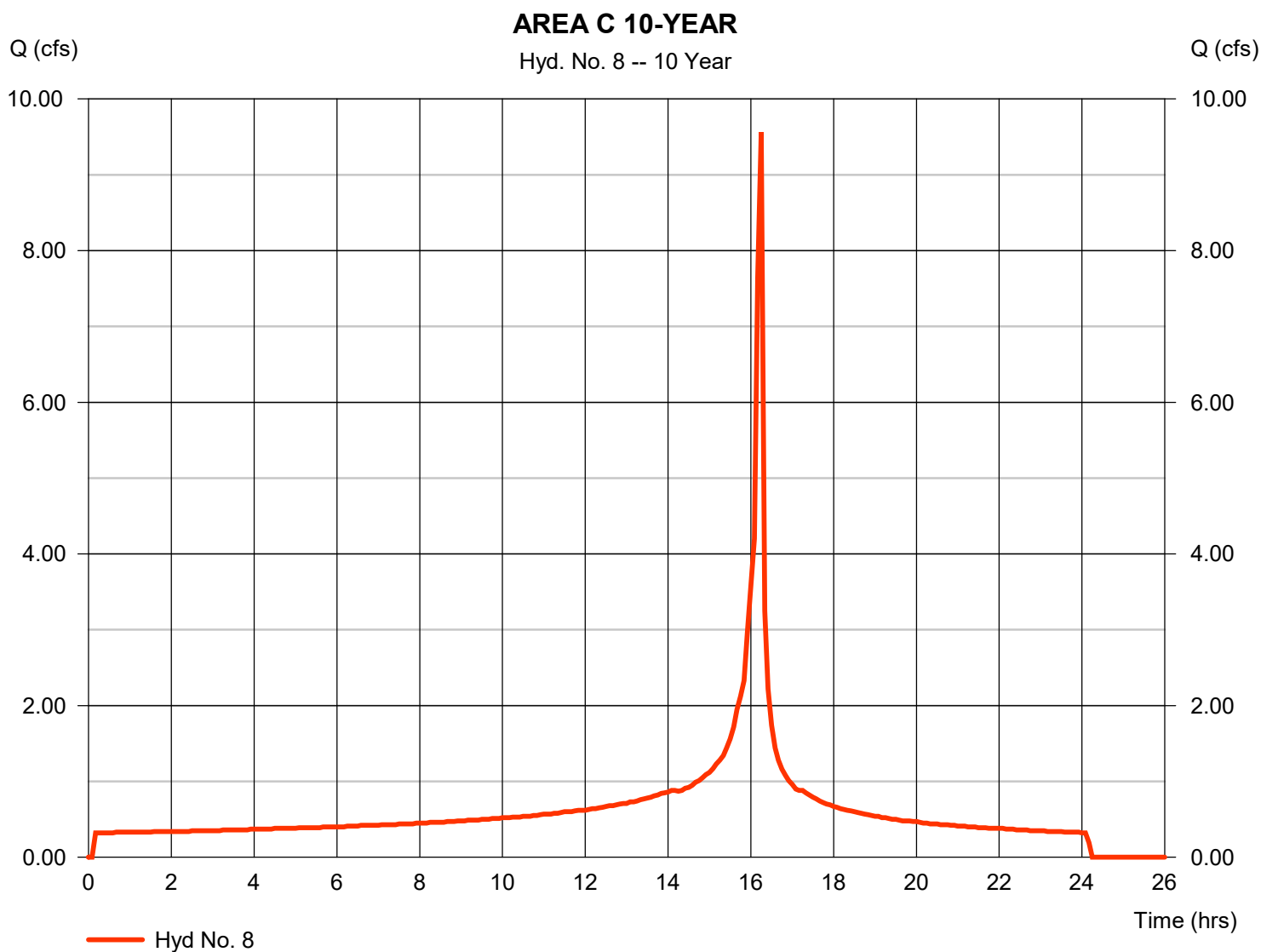
Thursday, 04 / 2 / 2020

Hyd. No. 8

AREA C 10-YEAR

Hydrograph type = Manual
Storm frequency = 10 yrs
Time interval = 5 min

Peak discharge = 9.560 cfs
Time to peak = 16.25 hrs
Hyd. volume = 56,799 cuft



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

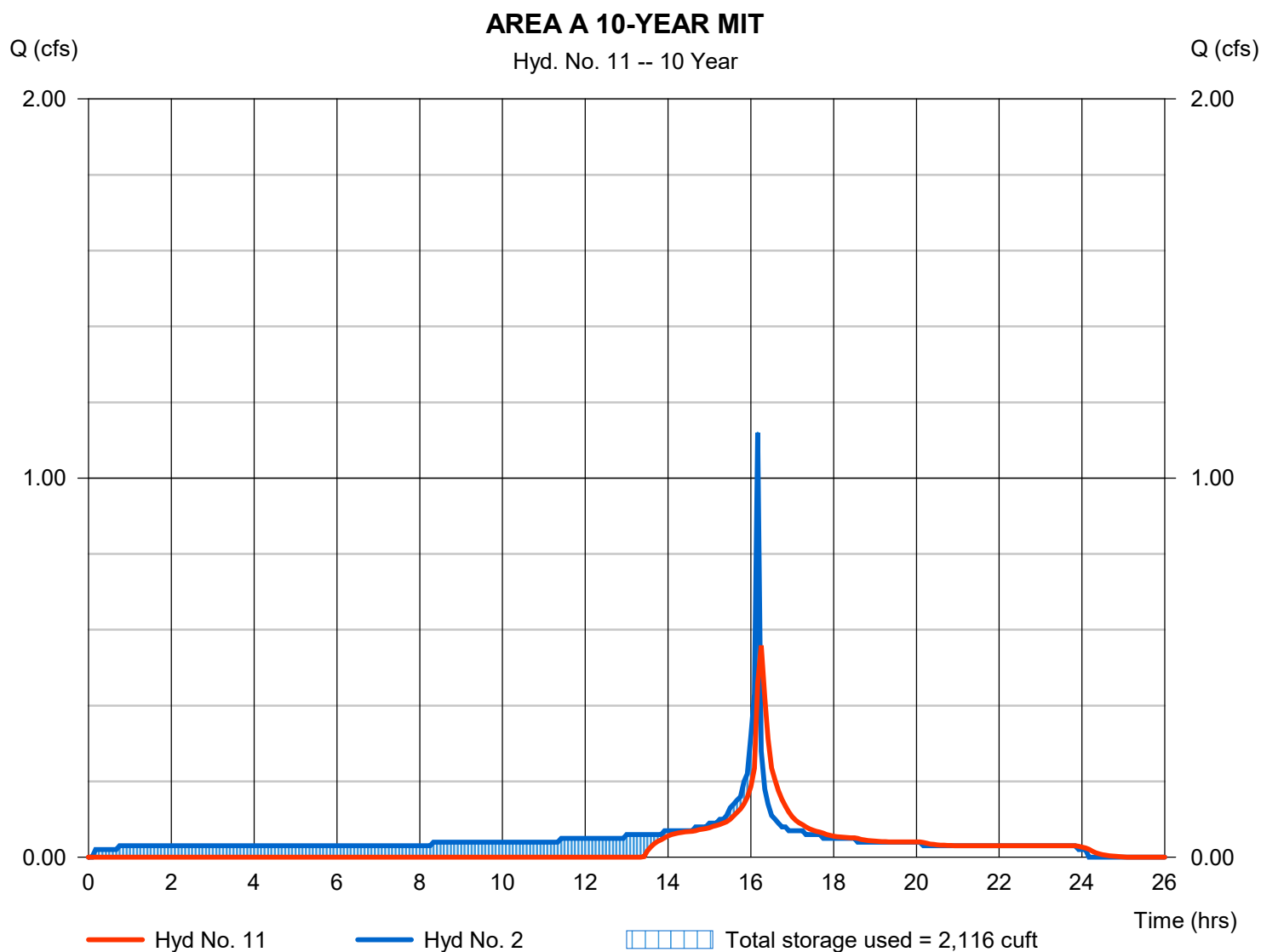
Thursday, 04 / 2 / 2020

Hyd. No. 11

AREA A 10-YEAR MIT

Hydrograph type	= Reservoir	Peak discharge	= 0.559 cfs
Storm frequency	= 10 yrs	Time to peak	= 16.25 hrs
Time interval	= 5 min	Hyd. volume	= 2,734 cuft
Inflow hyd. No.	= 2 - AREA A 10-YEAR	Max. Elevation	= 3626.19 ft
Reservoir name	= POND A	Max. Storage	= 2,116 cuft

Storage Indication method used.



Pond Report

9

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

Thursday, 04 / 2 / 2020

Pond No. 1 - POND A

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 3625.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	3625.00	1,329	0	0
1.00	3626.00	2,073	1,687	1,687
2.00	3627.00	2,873	2,462	4,149

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	Inactive	0.00	0.00	0.00
Span (in)	= 0.10	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 3625.00	0.00	0.00	0.00
Length (ft)	= 1.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 2.25	0.00	0.00	0.00
Crest El. (ft)	= 3626.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 0.000 (by Contour)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	3625.00	0.00	---	---	---	0.00	---	---	---	---	---	0.000
0.10	169	3625.10	0.00	---	---	---	0.00	---	---	---	---	---	0.000
0.20	337	3625.20	0.00	---	---	---	0.00	---	---	---	---	---	0.000
0.30	506	3625.30	0.00	---	---	---	0.00	---	---	---	---	---	0.000
0.40	675	3625.40	0.00	---	---	---	0.00	---	---	---	---	---	0.000
0.50	844	3625.50	0.00	---	---	---	0.00	---	---	---	---	---	0.000
0.60	1,012	3625.60	0.00	---	---	---	0.00	---	---	---	---	---	0.000
0.70	1,181	3625.70	0.00	---	---	---	0.00	---	---	---	---	---	0.000
0.80	1,350	3625.80	0.00	---	---	---	0.00	---	---	---	---	---	0.000
0.90	1,518	3625.90	0.00	---	---	---	0.00	---	---	---	---	---	0.000
1.00	1,687	3626.00	0.00	---	---	---	0.00	---	---	---	---	---	0.000
1.10	1,933	3626.10	0.00	---	---	---	0.24	---	---	---	---	---	0.237
1.20	2,179	3626.20	0.00	---	---	---	0.67	---	---	---	---	---	0.670
1.30	2,426	3626.30	0.00	---	---	---	1.23	---	---	---	---	---	1.231
1.40	2,672	3626.40	0.00	---	---	---	1.89	---	---	---	---	---	1.895
1.50	2,918	3626.50	0.00	---	---	---	2.65	---	---	---	---	---	2.649
1.60	3,164	3626.60	0.00	---	---	---	3.49	---	---	---	---	---	3.492
1.70	3,410	3626.70	0.00	---	---	---	4.40	---	---	---	---	---	4.397
1.80	3,657	3626.80	0.00	---	---	---	5.37	---	---	---	---	---	5.372
1.90	3,903	3626.90	0.00	---	---	---	6.41	---	---	---	---	---	6.407
2.00	4,149	3627.00	0.00	---	---	---	7.49	---	---	---	---	---	7.492

Pond No. 1 - POND A

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 3625.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	3625.00	1,329	0	0
1.00	3626.00	2,073	1,687	1,687
2.00	3627.00	2,873	2,462	4,149

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	Inactive	0.00	0.00	0.00
Span (in)	= 0.10	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 3625.00	0.00	0.00	0.00
Length (ft)	= 1.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 2.25	0.00	0.00	0.00
Crest El. (ft)	= 3626.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 0.000 (by Contour)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	3625.00	0.00	---	---	---	0.00	---	---	---	---	---	0.000
0.10	169	3625.10	0.00	---	---	---	0.00	---	---	---	---	---	0.000
0.20	337	3625.20	0.00	---	---	---	0.00	---	---	---	---	---	0.000
0.30	506	3625.30	0.00	---	---	---	0.00	---	---	---	---	---	0.000
0.40	675	3625.40	0.00	---	---	---	0.00	---	---	---	---	---	0.000
0.50	844	3625.50	0.00	---	---	---	0.00	---	---	---	---	---	0.000
0.60	1,012	3625.60	0.00	---	---	---	0.00	---	---	---	---	---	0.000
0.70	1,181	3625.70	0.00	---	---	---	0.00	---	---	---	---	---	0.000
0.80	1,350	3625.80	0.00	---	---	---	0.00	---	---	---	---	---	0.000
0.90	1,518	3625.90	0.00	---	---	---	0.00	---	---	---	---	---	0.000
1.00	1,687	3626.00	0.00	---	---	---	0.00	---	---	---	---	---	0.000
1.10	1,933	3626.10	0.00	---	---	---	0.24	---	---	---	---	---	0.237
1.20	2,179	3626.20	0.00	---	---	---	0.67	---	---	---	---	---	0.670
1.30	2,426	3626.30	0.00	---	---	---	1.23	---	---	---	---	---	1.231
1.40	2,672	3626.40	0.00	---	---	---	1.89	---	---	---	---	---	1.895
1.50	2,918	3626.50	0.00	---	---	---	2.65	---	---	---	---	---	2.649
1.60	3,164	3626.60	0.00	---	---	---	3.49	---	---	---	---	---	3.492
1.70	3,410	3626.70	0.00	---	---	---	4.40	---	---	---	---	---	4.397
1.80	3,657	3626.80	0.00	---	---	---	5.37	---	---	---	---	---	5.372
1.90	3,903	3626.90	0.00	---	---	---	6.41	---	---	---	---	---	6.407
2.00	4,149	3627.00	0.00	---	---	---	7.49	---	---	---	---	---	7.492

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

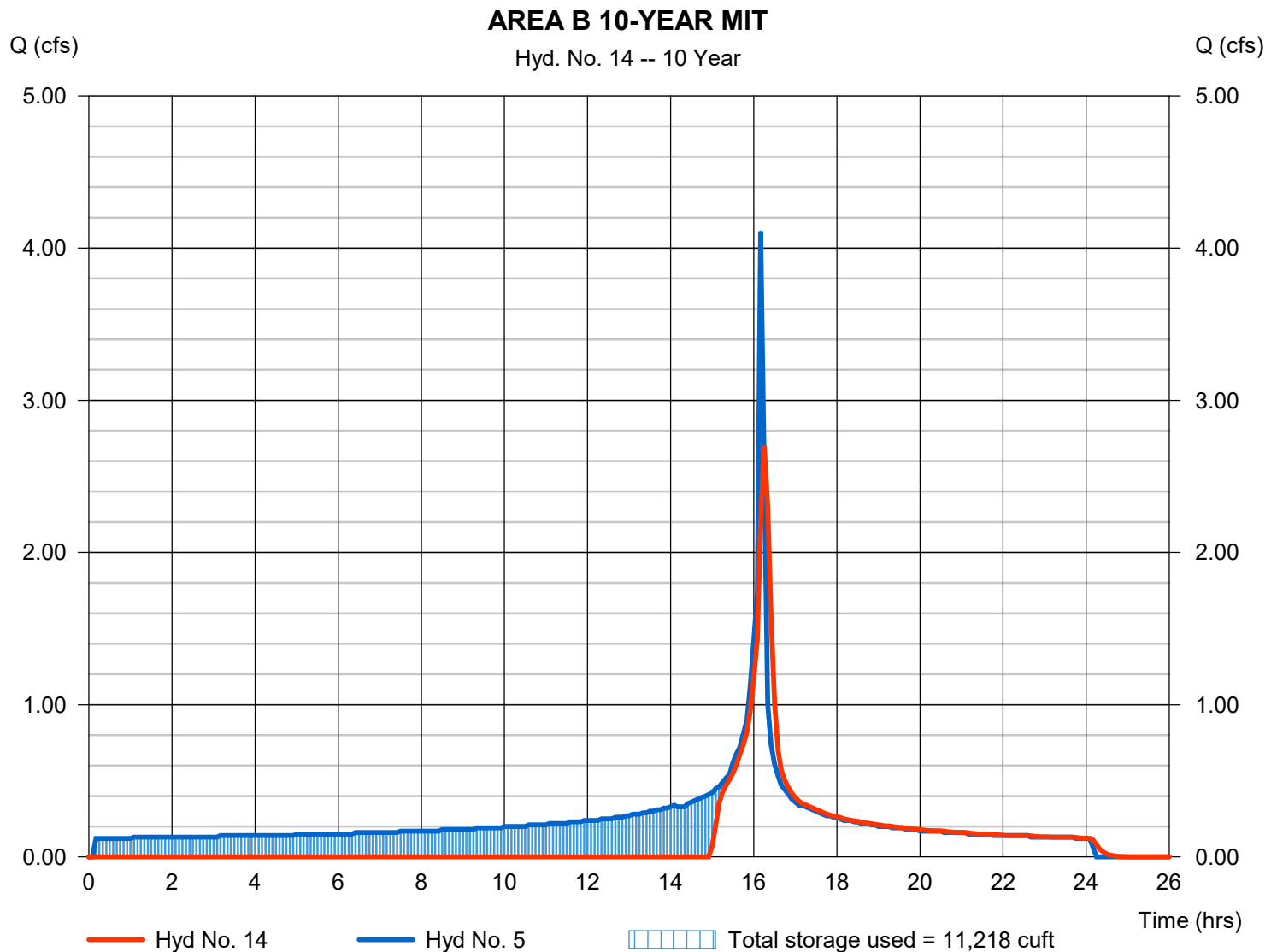
Thursday, 04 / 2 / 2020

Hyd. No. 14

AREA B 10-YEAR MIT

Hydrograph type	= Reservoir	Peak discharge	= 2.704 cfs
Storm frequency	= 10 yrs	Time to peak	= 16.25 hrs
Time interval	= 5 min	Hyd. volume	= 11,426 cuft
Inflow hyd. No.	= 5 - AREA B 10-YEAR	Max. Elevation	= 3621.90 ft
Reservoir name	= POND B	Max. Storage	= 11,218 cuft

Storage Indication method used.



Pond Report

13

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

Thursday, 04 / 2 / 2020

Pond No. 3 - POND B

Pond Data

UG Chambers -Invert elev. = 3614.50 ft, Rise x Span = 8.00 x 8.00 ft, Barrel Len = 90.00 ft, No. Barrels = 2, Slope = 0.00%, Headers = No
Encasement -Invert elev. = 3613.50 ft, Width = 10.00 ft, Height = 10.00 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	3613.50	n/a	0	0
1.00	3614.50	n/a	720	720
2.00	3615.50	n/a	1,112	1,832
3.00	3616.50	n/a	1,390	3,223
4.00	3617.50	n/a	1,519	4,742
5.00	3618.50	n/a	1,575	6,316
6.00	3619.50	n/a	1,576	7,892
7.00	3620.50	n/a	1,517	9,409
8.00	3621.50	n/a	1,390	10,799
9.00	3622.50	n/a	1,112	11,911
10.00	3623.50	n/a	720	12,631

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 4.00	0.00	0.00	0.00
Span (in)	= 24.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 3621.00	0.00	0.00	0.00
Length (ft)	= 10.00	0.00	0.00	0.00
Slope (%)	= 2.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 0.000 (by Contour)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	3613.50	0.00	---	---	---	---	---	---	---	---	---	0.000
0.10	72	3613.60	0.00	---	---	---	---	---	---	---	---	---	0.000
0.20	144	3613.70	0.00	---	---	---	---	---	---	---	---	---	0.000
0.30	216	3613.80	0.00	---	---	---	---	---	---	---	---	---	0.000
0.40	288	3613.90	0.00	---	---	---	---	---	---	---	---	---	0.000
0.50	360	3614.00	0.00	---	---	---	---	---	---	---	---	---	0.000
0.60	432	3614.10	0.00	---	---	---	---	---	---	---	---	---	0.000
0.70	504	3614.20	0.00	---	---	---	---	---	---	---	---	---	0.000
0.80	576	3614.30	0.00	---	---	---	---	---	---	---	---	---	0.000
0.90	648	3614.40	0.00	---	---	---	---	---	---	---	---	---	0.000
1.00	720	3614.50	0.00	---	---	---	---	---	---	---	---	---	0.000
1.10	831	3614.60	0.00	---	---	---	---	---	---	---	---	---	0.000
1.20	943	3614.70	0.00	---	---	---	---	---	---	---	---	---	0.000
1.30	1,054	3614.80	0.00	---	---	---	---	---	---	---	---	---	0.000
1.40	1,165	3614.90	0.00	---	---	---	---	---	---	---	---	---	0.000
1.50	1,276	3615.00	0.00	---	---	---	---	---	---	---	---	---	0.000
1.60	1,388	3615.10	0.00	---	---	---	---	---	---	---	---	---	0.000
1.70	1,499	3615.20	0.00	---	---	---	---	---	---	---	---	---	0.000
1.80	1,610	3615.30	0.00	---	---	---	---	---	---	---	---	---	0.000
1.90	1,721	3615.40	0.00	---	---	---	---	---	---	---	---	---	0.000
2.00	1,832	3615.50	0.00	---	---	---	---	---	---	---	---	---	0.000
2.10	1,971	3615.60	0.00	---	---	---	---	---	---	---	---	---	0.000
2.20	2,111	3615.70	0.00	---	---	---	---	---	---	---	---	---	0.000
2.30	2,250	3615.80	0.00	---	---	---	---	---	---	---	---	---	0.000
2.40	2,389	3615.90	0.00	---	---	---	---	---	---	---	---	---	0.000
2.50	2,528	3616.00	0.00	---	---	---	---	---	---	---	---	---	0.000
2.60	2,667	3616.10	0.00	---	---	---	---	---	---	---	---	---	0.000
2.70	2,806	3616.20	0.00	---	---	---	---	---	---	---	---	---	0.000
2.80	2,945	3616.30	0.00	---	---	---	---	---	---	---	---	---	0.000
2.90	3,084	3616.40	0.00	---	---	---	---	---	---	---	---	---	0.000
3.00	3,223	3616.50	0.00	---	---	---	---	---	---	---	---	---	0.000
3.10	3,375	3616.60	0.00	---	---	---	---	---	---	---	---	---	0.000

Continues on next page...

POND B

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
3.20	3,527	3616.70	0.00	---	---	---	---	---	---	---	---	---	0.000
3.30	3,678	3616.80	0.00	---	---	---	---	---	---	---	---	---	0.000
3.40	3,830	3616.90	0.00	---	---	---	---	---	---	---	---	---	0.000
3.50	3,982	3617.00	0.00	---	---	---	---	---	---	---	---	---	0.000
3.60	4,134	3617.10	0.00	---	---	---	---	---	---	---	---	---	0.000
3.70	4,286	3617.20	0.00	---	---	---	---	---	---	---	---	---	0.000
3.80	4,438	3617.30	0.00	---	---	---	---	---	---	---	---	---	0.000
3.90	4,590	3617.40	0.00	---	---	---	---	---	---	---	---	---	0.000
4.00	4,742	3617.50	0.00	---	---	---	---	---	---	---	---	---	0.000
4.10	4,899	3617.60	0.00	---	---	---	---	---	---	---	---	---	0.000
4.20	5,057	3617.70	0.00	---	---	---	---	---	---	---	---	---	0.000
4.30	5,214	3617.80	0.00	---	---	---	---	---	---	---	---	---	0.000
4.40	5,371	3617.90	0.00	---	---	---	---	---	---	---	---	---	0.000
4.50	5,529	3618.00	0.00	---	---	---	---	---	---	---	---	---	0.000
4.60	5,686	3618.10	0.00	---	---	---	---	---	---	---	---	---	0.000
4.70	5,844	3618.20	0.00	---	---	---	---	---	---	---	---	---	0.000
4.80	6,001	3618.30	0.00	---	---	---	---	---	---	---	---	---	0.000
4.90	6,159	3618.40	0.00	---	---	---	---	---	---	---	---	---	0.000
5.00	6,316	3618.50	0.00	---	---	---	---	---	---	---	---	---	0.000
5.10	6,474	3618.60	0.00	---	---	---	---	---	---	---	---	---	0.000
5.20	6,631	3618.70	0.00	---	---	---	---	---	---	---	---	---	0.000
5.30	6,789	3618.80	0.00	---	---	---	---	---	---	---	---	---	0.000
5.40	6,947	3618.90	0.00	---	---	---	---	---	---	---	---	---	0.000
5.50	7,104	3619.00	0.00	---	---	---	---	---	---	---	---	---	0.000
5.60	7,262	3619.10	0.00	---	---	---	---	---	---	---	---	---	0.000
5.70	7,420	3619.20	0.00	---	---	---	---	---	---	---	---	---	0.000
5.80	7,577	3619.30	0.00	---	---	---	---	---	---	---	---	---	0.000
5.90	7,735	3619.40	0.00	---	---	---	---	---	---	---	---	---	0.000
6.00	7,892	3619.50	0.00	---	---	---	---	---	---	---	---	---	0.000
6.10	8,044	3619.60	0.00	---	---	---	---	---	---	---	---	---	0.000
6.20	8,196	3619.70	0.00	---	---	---	---	---	---	---	---	---	0.000
6.30	8,347	3619.80	0.00	---	---	---	---	---	---	---	---	---	0.000
6.40	8,499	3619.90	0.00	---	---	---	---	---	---	---	---	---	0.000
6.50	8,651	3620.00	0.00	---	---	---	---	---	---	---	---	---	0.000
6.60	8,803	3620.10	0.00	---	---	---	---	---	---	---	---	---	0.000
6.70	8,954	3620.20	0.00	---	---	---	---	---	---	---	---	---	0.000
6.80	9,106	3620.30	0.00	---	---	---	---	---	---	---	---	---	0.000
6.90	9,258	3620.40	0.00	---	---	---	---	---	---	---	---	---	0.000
7.00	9,409	3620.50	0.00	---	---	---	---	---	---	---	---	---	0.000
7.10	9,548	3620.60	0.00	---	---	---	---	---	---	---	---	---	0.000
7.20	9,687	3620.70	0.00	---	---	---	---	---	---	---	---	---	0.000
7.30	9,826	3620.80	0.00	---	---	---	---	---	---	---	---	---	0.000
7.40	9,965	3620.90	0.00	---	---	---	---	---	---	---	---	---	0.000
7.50	10,104	3621.00	0.00 ic	---	---	---	---	---	---	---	---	---	0.000
7.60	10,243	3621.10	0.22 ic	---	---	---	---	---	---	---	---	---	0.217
7.70	10,382	3621.20	0.61 ic	---	---	---	---	---	---	---	---	---	0.612
7.80	10,521	3621.30	1.12 ic	---	---	---	---	---	---	---	---	---	1.123
7.90	10,660	3621.40	1.55 ic	---	---	---	---	---	---	---	---	---	1.553
8.00	10,799	3621.50	1.85 ic	---	---	---	---	---	---	---	---	---	1.853
8.10	10,910	3621.60	2.11 ic	---	---	---	---	---	---	---	---	---	2.113
8.20	11,022	3621.70	2.34 ic	---	---	---	---	---	---	---	---	---	2.345
8.30	11,133	3621.80	2.56 ic	---	---	---	---	---	---	---	---	---	2.555
8.40	11,244	3621.90	2.75 ic	---	---	---	---	---	---	---	---	---	2.750
8.50	11,355	3622.00	2.93 ic	---	---	---	---	---	---	---	---	---	2.931
8.60	11,466	3622.10	3.10 ic	---	---	---	---	---	---	---	---	---	3.102
8.70	11,578	3622.20	3.26 ic	---	---	---	---	---	---	---	---	---	3.264
8.80	11,689	3622.30	3.42 ic	---	---	---	---	---	---	---	---	---	3.418
8.90	11,800	3622.40	3.57 ic	---	---	---	---	---	---	---	---	---	3.566
9.00	11,911	3622.50	3.71 ic	---	---	---	---	---	---	---	---	---	3.707
9.10	11,983	3622.60	3.84 ic	---	---	---	---	---	---	---	---	---	3.843
9.20	12,055	3622.70	3.98 ic	---	---	---	---	---	---	---	---	---	3.975
9.30	12,127	3622.80	4.10 ic	---	---	---	---	---	---	---	---	---	4.103
9.40	12,199	3622.90	4.23 ic	---	---	---	---	---	---	---	---	---	4.227
9.50	12,271	3623.00	4.35 ic	---	---	---	---	---	---	---	---	---	4.347
9.60	12,343	3623.10	4.46 ic	---	---	---	---	---	---	---	---	---	4.464
9.70	12,415	3623.20	4.58 ic	---	---	---	---	---	---	---	---	---	4.578
9.80	12,487	3623.30	4.69 ic	---	---	---	---	---	---	---	---	---	4.689
9.90	12,559	3623.40	4.80 ic	---	---	---	---	---	---	---	---	---	4.798
10.00	12,631	3623.50	4.90 ic	---	---	---	---	---	---	---	---	---	4.903

...End

Pond Report

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Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

Thursday, 04 / 2 / 2020

Pond No. 3 - POND B

Pond Data

UG Chambers -Invert elev. = 3614.50 ft, Rise x Span = 8.00 x 8.00 ft, Barrel Len = 90.00 ft, No. Barrels = 2, Slope = 0.00%, Headers = No
Encasement -Invert elev. = 3613.50 ft, Width = 10.00 ft, Height = 10.00 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	3613.50	n/a	0	0
1.00	3614.50	n/a	720	720
2.00	3615.50	n/a	1,112	1,832
3.00	3616.50	n/a	1,390	3,223
4.00	3617.50	n/a	1,519	4,742
5.00	3618.50	n/a	1,575	6,316
6.00	3619.50	n/a	1,576	7,892
7.00	3620.50	n/a	1,517	9,409
8.00	3621.50	n/a	1,390	10,799
9.00	3622.50	n/a	1,112	11,911
10.00	3623.50	n/a	720	12,631

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 4.00	0.00	0.00	0.00
Span (in)	= 24.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 3621.00	0.00	0.00	0.00
Length (ft)	= 10.00	0.00	0.00	0.00
Slope (%)	= 2.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 0.000 (by Contour)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	3613.50	0.00	---	---	---	---	---	---	---	---	---	0.000
0.10	72	3613.60	0.00	---	---	---	---	---	---	---	---	---	0.000
0.20	144	3613.70	0.00	---	---	---	---	---	---	---	---	---	0.000
0.30	216	3613.80	0.00	---	---	---	---	---	---	---	---	---	0.000
0.40	288	3613.90	0.00	---	---	---	---	---	---	---	---	---	0.000
0.50	360	3614.00	0.00	---	---	---	---	---	---	---	---	---	0.000
0.60	432	3614.10	0.00	---	---	---	---	---	---	---	---	---	0.000
0.70	504	3614.20	0.00	---	---	---	---	---	---	---	---	---	0.000
0.80	576	3614.30	0.00	---	---	---	---	---	---	---	---	---	0.000
0.90	648	3614.40	0.00	---	---	---	---	---	---	---	---	---	0.000
1.00	720	3614.50	0.00	---	---	---	---	---	---	---	---	---	0.000
1.10	831	3614.60	0.00	---	---	---	---	---	---	---	---	---	0.000
1.20	943	3614.70	0.00	---	---	---	---	---	---	---	---	---	0.000
1.30	1,054	3614.80	0.00	---	---	---	---	---	---	---	---	---	0.000
1.40	1,165	3614.90	0.00	---	---	---	---	---	---	---	---	---	0.000
1.50	1,276	3615.00	0.00	---	---	---	---	---	---	---	---	---	0.000
1.60	1,388	3615.10	0.00	---	---	---	---	---	---	---	---	---	0.000
1.70	1,499	3615.20	0.00	---	---	---	---	---	---	---	---	---	0.000
1.80	1,610	3615.30	0.00	---	---	---	---	---	---	---	---	---	0.000
1.90	1,721	3615.40	0.00	---	---	---	---	---	---	---	---	---	0.000
2.00	1,832	3615.50	0.00	---	---	---	---	---	---	---	---	---	0.000
2.10	1,971	3615.60	0.00	---	---	---	---	---	---	---	---	---	0.000
2.20	2,111	3615.70	0.00	---	---	---	---	---	---	---	---	---	0.000
2.30	2,250	3615.80	0.00	---	---	---	---	---	---	---	---	---	0.000
2.40	2,389	3615.90	0.00	---	---	---	---	---	---	---	---	---	0.000
2.50	2,528	3616.00	0.00	---	---	---	---	---	---	---	---	---	0.000
2.60	2,667	3616.10	0.00	---	---	---	---	---	---	---	---	---	0.000
2.70	2,806	3616.20	0.00	---	---	---	---	---	---	---	---	---	0.000
2.80	2,945	3616.30	0.00	---	---	---	---	---	---	---	---	---	0.000
2.90	3,084	3616.40	0.00	---	---	---	---	---	---	---	---	---	0.000
3.00	3,223	3616.50	0.00	---	---	---	---	---	---	---	---	---	0.000
3.10	3,375	3616.60	0.00	---	---	---	---	---	---	---	---	---	0.000

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POND B

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
3.20	3,527	3616.70	0.00	---	---	---	---	---	---	---	---	---	0.000
3.30	3,678	3616.80	0.00	---	---	---	---	---	---	---	---	---	0.000
3.40	3,830	3616.90	0.00	---	---	---	---	---	---	---	---	---	0.000
3.50	3,982	3617.00	0.00	---	---	---	---	---	---	---	---	---	0.000
3.60	4,134	3617.10	0.00	---	---	---	---	---	---	---	---	---	0.000
3.70	4,286	3617.20	0.00	---	---	---	---	---	---	---	---	---	0.000
3.80	4,438	3617.30	0.00	---	---	---	---	---	---	---	---	---	0.000
3.90	4,590	3617.40	0.00	---	---	---	---	---	---	---	---	---	0.000
4.00	4,742	3617.50	0.00	---	---	---	---	---	---	---	---	---	0.000
4.10	4,899	3617.60	0.00	---	---	---	---	---	---	---	---	---	0.000
4.20	5,057	3617.70	0.00	---	---	---	---	---	---	---	---	---	0.000
4.30	5,214	3617.80	0.00	---	---	---	---	---	---	---	---	---	0.000
4.40	5,371	3617.90	0.00	---	---	---	---	---	---	---	---	---	0.000
4.50	5,529	3618.00	0.00	---	---	---	---	---	---	---	---	---	0.000
4.60	5,686	3618.10	0.00	---	---	---	---	---	---	---	---	---	0.000
4.70	5,844	3618.20	0.00	---	---	---	---	---	---	---	---	---	0.000
4.80	6,001	3618.30	0.00	---	---	---	---	---	---	---	---	---	0.000
4.90	6,159	3618.40	0.00	---	---	---	---	---	---	---	---	---	0.000
5.00	6,316	3618.50	0.00	---	---	---	---	---	---	---	---	---	0.000
5.10	6,474	3618.60	0.00	---	---	---	---	---	---	---	---	---	0.000
5.20	6,631	3618.70	0.00	---	---	---	---	---	---	---	---	---	0.000
5.30	6,789	3618.80	0.00	---	---	---	---	---	---	---	---	---	0.000
5.40	6,947	3618.90	0.00	---	---	---	---	---	---	---	---	---	0.000
5.50	7,104	3619.00	0.00	---	---	---	---	---	---	---	---	---	0.000
5.60	7,262	3619.10	0.00	---	---	---	---	---	---	---	---	---	0.000
5.70	7,420	3619.20	0.00	---	---	---	---	---	---	---	---	---	0.000
5.80	7,577	3619.30	0.00	---	---	---	---	---	---	---	---	---	0.000
5.90	7,735	3619.40	0.00	---	---	---	---	---	---	---	---	---	0.000
6.00	7,892	3619.50	0.00	---	---	---	---	---	---	---	---	---	0.000
6.10	8,044	3619.60	0.00	---	---	---	---	---	---	---	---	---	0.000
6.20	8,196	3619.70	0.00	---	---	---	---	---	---	---	---	---	0.000
6.30	8,347	3619.80	0.00	---	---	---	---	---	---	---	---	---	0.000
6.40	8,499	3619.90	0.00	---	---	---	---	---	---	---	---	---	0.000
6.50	8,651	3620.00	0.00	---	---	---	---	---	---	---	---	---	0.000
6.60	8,803	3620.10	0.00	---	---	---	---	---	---	---	---	---	0.000
6.70	8,954	3620.20	0.00	---	---	---	---	---	---	---	---	---	0.000
6.80	9,106	3620.30	0.00	---	---	---	---	---	---	---	---	---	0.000
6.90	9,258	3620.40	0.00	---	---	---	---	---	---	---	---	---	0.000
7.00	9,409	3620.50	0.00	---	---	---	---	---	---	---	---	---	0.000
7.10	9,548	3620.60	0.00	---	---	---	---	---	---	---	---	---	0.000
7.20	9,687	3620.70	0.00	---	---	---	---	---	---	---	---	---	0.000
7.30	9,826	3620.80	0.00	---	---	---	---	---	---	---	---	---	0.000
7.40	9,965	3620.90	0.00	---	---	---	---	---	---	---	---	---	0.000
7.50	10,104	3621.00	0.00 ic	---	---	---	---	---	---	---	---	---	0.000
7.60	10,243	3621.10	0.22 ic	---	---	---	---	---	---	---	---	---	0.217
7.70	10,382	3621.20	0.61 ic	---	---	---	---	---	---	---	---	---	0.612
7.80	10,521	3621.30	1.12 ic	---	---	---	---	---	---	---	---	---	1.123
7.90	10,660	3621.40	1.55 ic	---	---	---	---	---	---	---	---	---	1.553
8.00	10,799	3621.50	1.85 ic	---	---	---	---	---	---	---	---	---	1.853
8.10	10,910	3621.60	2.11 ic	---	---	---	---	---	---	---	---	---	2.113
8.20	11,022	3621.70	2.34 ic	---	---	---	---	---	---	---	---	---	2.345
8.30	11,133	3621.80	2.56 ic	---	---	---	---	---	---	---	---	---	2.555
8.40	11,244	3621.90	2.75 ic	---	---	---	---	---	---	---	---	---	2.750
8.50	11,355	3622.00	2.93 ic	---	---	---	---	---	---	---	---	---	2.931
8.60	11,466	3622.10	3.10 ic	---	---	---	---	---	---	---	---	---	3.102
8.70	11,578	3622.20	3.26 ic	---	---	---	---	---	---	---	---	---	3.264
8.80	11,689	3622.30	3.42 ic	---	---	---	---	---	---	---	---	---	3.418
8.90	11,800	3622.40	3.57 ic	---	---	---	---	---	---	---	---	---	3.566
9.00	11,911	3622.50	3.71 ic	---	---	---	---	---	---	---	---	---	3.707
9.10	11,983	3622.60	3.84 ic	---	---	---	---	---	---	---	---	---	3.843
9.20	12,055	3622.70	3.98 ic	---	---	---	---	---	---	---	---	---	3.975
9.30	12,127	3622.80	4.10 ic	---	---	---	---	---	---	---	---	---	4.103
9.40	12,199	3622.90	4.23 ic	---	---	---	---	---	---	---	---	---	4.227
9.50	12,271	3623.00	4.35 ic	---	---	---	---	---	---	---	---	---	4.347
9.60	12,343	3623.10	4.46 ic	---	---	---	---	---	---	---	---	---	4.464
9.70	12,415	3623.20	4.58 ic	---	---	---	---	---	---	---	---	---	4.578
9.80	12,487	3623.30	4.69 ic	---	---	---	---	---	---	---	---	---	4.689
9.90	12,559	3623.40	4.80 ic	---	---	---	---	---	---	---	---	---	4.798
10.00	12,631	3623.50	4.90 ic	---	---	---	---	---	---	---	---	---	4.903

...End

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

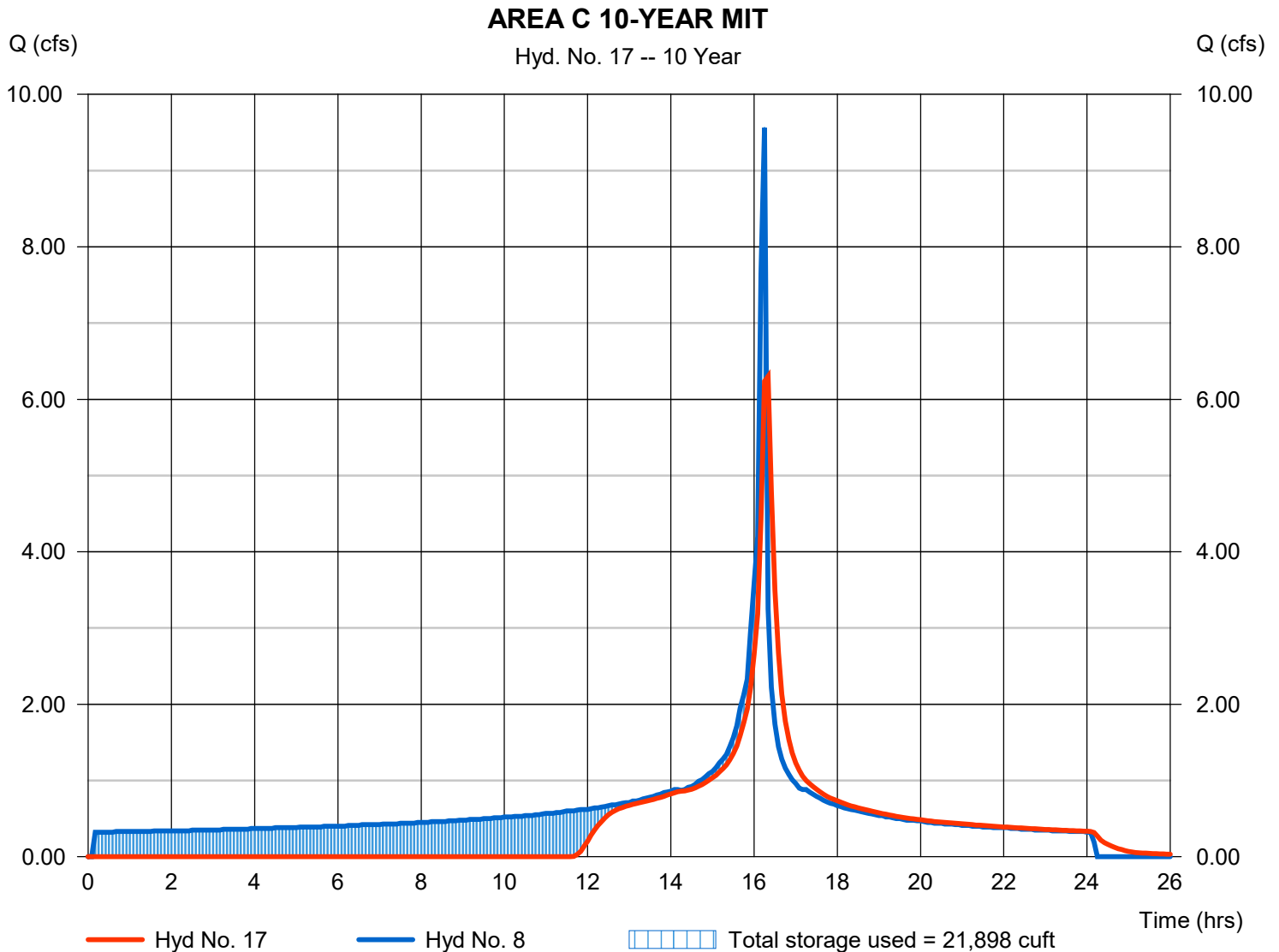
Thursday, 04 / 2 / 2020

Hyd. No. 17

AREA C 10-YEAR MIT

Hydrograph type	= Reservoir	Peak discharge	= 6.299 cfs
Storm frequency	= 10 yrs	Time to peak	= 16.33 hrs
Time interval	= 5 min	Hyd. volume	= 39,430 cuft
Inflow hyd. No.	= 8 - AREA C 10-YEAR	Max. Elevation	= 3623.54 ft
Reservoir name	= POND C	Max. Storage	= 21,898 cuft

Storage Indication method used.



Pond Report

19

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

Thursday, 04 / 2 / 2020

Pond No. 5 - POND C

Pond Data

UG Chambers -Invert elev. = 3617.00 ft, Rise x Span = 8.00 x 8.00 ft, Barrel Len = 132.00 ft, No. Barrels = 3, Slope = 0.00%, Headers = No
Encasement -Invert elev. = 3616.00 ft, Width = 10.00 ft, Height = 10.00 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	3616.00	n/a	0	0
1.00	3617.00	n/a	1,584	1,584
2.00	3618.00	n/a	2,447	4,031
3.00	3619.00	n/a	3,059	7,090
4.00	3620.00	n/a	3,341	10,432
5.00	3621.00	n/a	3,464	13,896
6.00	3622.00	n/a	3,468	17,363
7.00	3623.00	n/a	3,337	20,701
8.00	3624.00	n/a	3,058	23,758
9.00	3625.00	n/a	2,446	26,204
10.00	3626.00	n/a	1,584	27,789

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 17.00	0.00	0.00	0.00
Span (in)	= 17.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 3622.00	0.00	0.00	0.00
Length (ft)	= 200.00	0.00	0.00	0.00
Slope (%)	= 0.65	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 0.000 (by Contour)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	3616.00	0.00	---	---	---	---	---	---	---	---	---	0.000
0.10	158	3616.10	0.00	---	---	---	---	---	---	---	---	---	0.000
0.20	317	3616.20	0.00	---	---	---	---	---	---	---	---	---	0.000
0.30	475	3616.30	0.00	---	---	---	---	---	---	---	---	---	0.000
0.40	634	3616.40	0.00	---	---	---	---	---	---	---	---	---	0.000
0.50	792	3616.50	0.00	---	---	---	---	---	---	---	---	---	0.000
0.60	951	3616.60	0.00	---	---	---	---	---	---	---	---	---	0.000
0.70	1,109	3616.70	0.00	---	---	---	---	---	---	---	---	---	0.000
0.80	1,267	3616.80	0.00	---	---	---	---	---	---	---	---	---	0.000
0.90	1,426	3616.90	0.00	---	---	---	---	---	---	---	---	---	0.000
1.00	1,584	3617.00	0.00	---	---	---	---	---	---	---	---	---	0.000
1.10	1,829	3617.10	0.00	---	---	---	---	---	---	---	---	---	0.000
1.20	2,074	3617.20	0.00	---	---	---	---	---	---	---	---	---	0.000
1.30	2,318	3617.30	0.00	---	---	---	---	---	---	---	---	---	0.000
1.40	2,563	3617.40	0.00	---	---	---	---	---	---	---	---	---	0.000
1.50	2,808	3617.50	0.00	---	---	---	---	---	---	---	---	---	0.000
1.60	3,053	3617.60	0.00	---	---	---	---	---	---	---	---	---	0.000
1.70	3,297	3617.70	0.00	---	---	---	---	---	---	---	---	---	0.000
1.80	3,542	3617.80	0.00	---	---	---	---	---	---	---	---	---	0.000
1.90	3,787	3617.90	0.00	---	---	---	---	---	---	---	---	---	0.000
2.00	4,031	3618.00	0.00	---	---	---	---	---	---	---	---	---	0.000
2.10	4,337	3618.10	0.00	---	---	---	---	---	---	---	---	---	0.000
2.20	4,643	3618.20	0.00	---	---	---	---	---	---	---	---	---	0.000
2.30	4,949	3618.30	0.00	---	---	---	---	---	---	---	---	---	0.000
2.40	5,255	3618.40	0.00	---	---	---	---	---	---	---	---	---	0.000
2.50	5,561	3618.50	0.00	---	---	---	---	---	---	---	---	---	0.000
2.60	5,867	3618.60	0.00	---	---	---	---	---	---	---	---	---	0.000
2.70	6,172	3618.70	0.00	---	---	---	---	---	---	---	---	---	0.000
2.80	6,478	3618.80	0.00	---	---	---	---	---	---	---	---	---	0.000
2.90	6,784	3618.90	0.00	---	---	---	---	---	---	---	---	---	0.000
3.00	7,090	3619.00	0.00	---	---	---	---	---	---	---	---	---	0.000
3.10	7,424	3619.10	0.00	---	---	---	---	---	---	---	---	---	0.000

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POND C

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
3.20	7,758	3619.20	0.00	---	---	---	---	---	---	---	---	---	0.000
3.30	8,093	3619.30	0.00	---	---	---	---	---	---	---	---	---	0.000
3.40	8,427	3619.40	0.00	---	---	---	---	---	---	---	---	---	0.000
3.50	8,761	3619.50	0.00	---	---	---	---	---	---	---	---	---	0.000
3.60	9,095	3619.60	0.00	---	---	---	---	---	---	---	---	---	0.000
3.70	9,429	3619.70	0.00	---	---	---	---	---	---	---	---	---	0.000
3.80	9,763	3619.80	0.00	---	---	---	---	---	---	---	---	---	0.000
3.90	10,097	3619.90	0.00	---	---	---	---	---	---	---	---	---	0.000
4.00	10,432	3620.00	0.00	---	---	---	---	---	---	---	---	---	0.000
4.10	10,778	3620.10	0.00	---	---	---	---	---	---	---	---	---	0.000
4.20	11,124	3620.20	0.00	---	---	---	---	---	---	---	---	---	0.000
4.30	11,471	3620.30	0.00	---	---	---	---	---	---	---	---	---	0.000
4.40	11,817	3620.40	0.00	---	---	---	---	---	---	---	---	---	0.000
4.50	12,164	3620.50	0.00	---	---	---	---	---	---	---	---	---	0.000
4.60	12,510	3620.60	0.00	---	---	---	---	---	---	---	---	---	0.000
4.70	12,856	3620.70	0.00	---	---	---	---	---	---	---	---	---	0.000
4.80	13,203	3620.80	0.00	---	---	---	---	---	---	---	---	---	0.000
4.90	13,549	3620.90	0.00	---	---	---	---	---	---	---	---	---	0.000
5.00	13,896	3621.00	0.00	---	---	---	---	---	---	---	---	---	0.000
5.10	14,242	3621.10	0.00	---	---	---	---	---	---	---	---	---	0.000
5.20	14,589	3621.20	0.00	---	---	---	---	---	---	---	---	---	0.000
5.30	14,936	3621.30	0.00	---	---	---	---	---	---	---	---	---	0.000
5.40	15,283	3621.40	0.00	---	---	---	---	---	---	---	---	---	0.000
5.50	15,629	3621.50	0.00	---	---	---	---	---	---	---	---	---	0.000
5.60	15,976	3621.60	0.00	---	---	---	---	---	---	---	---	---	0.000
5.70	16,323	3621.70	0.00	---	---	---	---	---	---	---	---	---	0.000
5.80	16,670	3621.80	0.00	---	---	---	---	---	---	---	---	---	0.000
5.90	17,017	3621.90	0.00	---	---	---	---	---	---	---	---	---	0.000
6.00	17,363	3622.00	0.00	---	---	---	---	---	---	---	---	---	0.000
6.10	17,697	3622.10	0.05 ic	---	---	---	---	---	---	---	---	---	0.053
6.20	18,031	3622.20	0.21 ic	---	---	---	---	---	---	---	---	---	0.207
6.30	18,364	3622.30	0.46 ic	---	---	---	---	---	---	---	---	---	0.457
6.40	18,698	3622.40	0.79 ic	---	---	---	---	---	---	---	---	---	0.789
6.50	19,032	3622.50	1.20 ic	---	---	---	---	---	---	---	---	---	1.201
6.60	19,366	3622.60	1.68 ic	---	---	---	---	---	---	---	---	---	1.679
6.70	19,699	3622.70	2.22 ic	---	---	---	---	---	---	---	---	---	2.219
6.80	20,033	3622.80	2.80 ic	---	---	---	---	---	---	---	---	---	2.802
6.90	20,367	3622.90	3.42 ic	---	---	---	---	---	---	---	---	---	3.421
7.00	20,701	3623.00	4.05 ic	---	---	---	---	---	---	---	---	---	4.053
7.10	21,006	3623.10	4.69 ic	---	---	---	---	---	---	---	---	---	4.694
7.20	21,312	3623.20	5.31 ic	---	---	---	---	---	---	---	---	---	5.312
7.30	21,618	3623.30	5.88 ic	---	---	---	---	---	---	---	---	---	5.881
7.40	21,924	3623.40	6.34 ic	---	---	---	---	---	---	---	---	---	6.338
7.50	22,229	3623.50	6.40 oc	---	---	---	---	---	---	---	---	---	6.403
7.60	22,535	3623.60	6.63 oc	---	---	---	---	---	---	---	---	---	6.631
7.70	22,841	3623.70	6.85 oc	---	---	---	---	---	---	---	---	---	6.851
7.80	23,147	3623.80	7.06 oc	---	---	---	---	---	---	---	---	---	7.064
7.90	23,453	3623.90	7.27 oc	---	---	---	---	---	---	---	---	---	7.271
8.00	23,758	3624.00	7.47 oc	---	---	---	---	---	---	---	---	---	7.470
8.10	24,003	3624.10	7.67 oc	---	---	---	---	---	---	---	---	---	7.666
8.20	24,248	3624.20	7.86 oc	---	---	---	---	---	---	---	---	---	7.857
8.30	24,492	3624.30	8.04 oc	---	---	---	---	---	---	---	---	---	8.044
8.40	24,737	3624.40	8.23 oc	---	---	---	---	---	---	---	---	---	8.226
8.50	24,981	3624.50	8.40 oc	---	---	---	---	---	---	---	---	---	8.404
8.60	25,226	3624.60	8.58 oc	---	---	---	---	---	---	---	---	---	8.579
8.70	25,471	3624.70	8.75 oc	---	---	---	---	---	---	---	---	---	8.750
8.80	25,715	3624.80	8.92 oc	---	---	---	---	---	---	---	---	---	8.918
8.90	25,960	3624.90	9.08 oc	---	---	---	---	---	---	---	---	---	9.083
9.00	26,204	3625.00	9.24 oc	---	---	---	---	---	---	---	---	---	9.243
9.10	26,363	3625.10	9.40 oc	---	---	---	---	---	---	---	---	---	9.402
9.20	26,521	3625.20	9.56 oc	---	---	---	---	---	---	---	---	---	9.558
9.30	26,680	3625.30	9.71 oc	---	---	---	---	---	---	---	---	---	9.712
9.40	26,838	3625.40	9.86 oc	---	---	---	---	---	---	---	---	---	9.864
9.50	26,996	3625.50	10.01 oc	---	---	---	---	---	---	---	---	---	10.01
9.60	27,155	3625.60	10.16 oc	---	---	---	---	---	---	---	---	---	10.16
9.70	27,313	3625.70	10.31 oc	---	---	---	---	---	---	---	---	---	10.31
9.80	27,472	3625.80	10.45 oc	---	---	---	---	---	---	---	---	---	10.45
9.90	27,630	3625.90	10.59 oc	---	---	---	---	---	---	---	---	---	10.59
10.00	27,789	3626.00	10.73 oc	---	---	---	---	---	---	---	---	---	10.73

...End

Pond Report

22

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

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Pond No. 5 - POND C

Pond Data

UG Chambers -Invert elev. = 3617.00 ft, Rise x Span = 8.00 x 8.00 ft, Barrel Len = 132.00 ft, No. Barrels = 3, Slope = 0.00%, Headers = No
Encasement -Invert elev. = 3616.00 ft, Width = 10.00 ft, Height = 10.00 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	3616.00	n/a	0	0
1.00	3617.00	n/a	1,584	1,584
2.00	3618.00	n/a	2,447	4,031
3.00	3619.00	n/a	3,059	7,090
4.00	3620.00	n/a	3,341	10,432
5.00	3621.00	n/a	3,464	13,896
6.00	3622.00	n/a	3,468	17,363
7.00	3623.00	n/a	3,337	20,701
8.00	3624.00	n/a	3,058	23,758
9.00	3625.00	n/a	2,446	26,204
10.00	3626.00	n/a	1,584	27,789

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 17.00	0.00	0.00	0.00
Span (in)	= 17.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 3622.00	0.00	0.00	0.00
Length (ft)	= 200.00	0.00	0.00	0.00
Slope (%)	= 0.65	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 0.000 (by Contour)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	3616.00	0.00	---	---	---	---	---	---	---	---	---	0.000
0.10	158	3616.10	0.00	---	---	---	---	---	---	---	---	---	0.000
0.20	317	3616.20	0.00	---	---	---	---	---	---	---	---	---	0.000
0.30	475	3616.30	0.00	---	---	---	---	---	---	---	---	---	0.000
0.40	634	3616.40	0.00	---	---	---	---	---	---	---	---	---	0.000
0.50	792	3616.50	0.00	---	---	---	---	---	---	---	---	---	0.000
0.60	951	3616.60	0.00	---	---	---	---	---	---	---	---	---	0.000
0.70	1,109	3616.70	0.00	---	---	---	---	---	---	---	---	---	0.000
0.80	1,267	3616.80	0.00	---	---	---	---	---	---	---	---	---	0.000
0.90	1,426	3616.90	0.00	---	---	---	---	---	---	---	---	---	0.000
1.00	1,584	3617.00	0.00	---	---	---	---	---	---	---	---	---	0.000
1.10	1,829	3617.10	0.00	---	---	---	---	---	---	---	---	---	0.000
1.20	2,074	3617.20	0.00	---	---	---	---	---	---	---	---	---	0.000
1.30	2,318	3617.30	0.00	---	---	---	---	---	---	---	---	---	0.000
1.40	2,563	3617.40	0.00	---	---	---	---	---	---	---	---	---	0.000
1.50	2,808	3617.50	0.00	---	---	---	---	---	---	---	---	---	0.000
1.60	3,053	3617.60	0.00	---	---	---	---	---	---	---	---	---	0.000
1.70	3,297	3617.70	0.00	---	---	---	---	---	---	---	---	---	0.000
1.80	3,542	3617.80	0.00	---	---	---	---	---	---	---	---	---	0.000
1.90	3,787	3617.90	0.00	---	---	---	---	---	---	---	---	---	0.000
2.00	4,031	3618.00	0.00	---	---	---	---	---	---	---	---	---	0.000
2.10	4,337	3618.10	0.00	---	---	---	---	---	---	---	---	---	0.000
2.20	4,643	3618.20	0.00	---	---	---	---	---	---	---	---	---	0.000
2.30	4,949	3618.30	0.00	---	---	---	---	---	---	---	---	---	0.000
2.40	5,255	3618.40	0.00	---	---	---	---	---	---	---	---	---	0.000
2.50	5,561	3618.50	0.00	---	---	---	---	---	---	---	---	---	0.000
2.60	5,867	3618.60	0.00	---	---	---	---	---	---	---	---	---	0.000
2.70	6,172	3618.70	0.00	---	---	---	---	---	---	---	---	---	0.000
2.80	6,478	3618.80	0.00	---	---	---	---	---	---	---	---	---	0.000
2.90	6,784	3618.90	0.00	---	---	---	---	---	---	---	---	---	0.000
3.00	7,090	3619.00	0.00	---	---	---	---	---	---	---	---	---	0.000
3.10	7,424	3619.10	0.00	---	---	---	---	---	---	---	---	---	0.000

Continues on next page...

POND C

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
3.20	7,758	3619.20	0.00	---	---	---	---	---	---	---	---	---	0.000
3.30	8,093	3619.30	0.00	---	---	---	---	---	---	---	---	---	0.000
3.40	8,427	3619.40	0.00	---	---	---	---	---	---	---	---	---	0.000
3.50	8,761	3619.50	0.00	---	---	---	---	---	---	---	---	---	0.000
3.60	9,095	3619.60	0.00	---	---	---	---	---	---	---	---	---	0.000
3.70	9,429	3619.70	0.00	---	---	---	---	---	---	---	---	---	0.000
3.80	9,763	3619.80	0.00	---	---	---	---	---	---	---	---	---	0.000
3.90	10,097	3619.90	0.00	---	---	---	---	---	---	---	---	---	0.000
4.00	10,432	3620.00	0.00	---	---	---	---	---	---	---	---	---	0.000
4.10	10,778	3620.10	0.00	---	---	---	---	---	---	---	---	---	0.000
4.20	11,124	3620.20	0.00	---	---	---	---	---	---	---	---	---	0.000
4.30	11,471	3620.30	0.00	---	---	---	---	---	---	---	---	---	0.000
4.40	11,817	3620.40	0.00	---	---	---	---	---	---	---	---	---	0.000
4.50	12,164	3620.50	0.00	---	---	---	---	---	---	---	---	---	0.000
4.60	12,510	3620.60	0.00	---	---	---	---	---	---	---	---	---	0.000
4.70	12,856	3620.70	0.00	---	---	---	---	---	---	---	---	---	0.000
4.80	13,203	3620.80	0.00	---	---	---	---	---	---	---	---	---	0.000
4.90	13,549	3620.90	0.00	---	---	---	---	---	---	---	---	---	0.000
5.00	13,896	3621.00	0.00	---	---	---	---	---	---	---	---	---	0.000
5.10	14,242	3621.10	0.00	---	---	---	---	---	---	---	---	---	0.000
5.20	14,589	3621.20	0.00	---	---	---	---	---	---	---	---	---	0.000
5.30	14,936	3621.30	0.00	---	---	---	---	---	---	---	---	---	0.000
5.40	15,283	3621.40	0.00	---	---	---	---	---	---	---	---	---	0.000
5.50	15,629	3621.50	0.00	---	---	---	---	---	---	---	---	---	0.000
5.60	15,976	3621.60	0.00	---	---	---	---	---	---	---	---	---	0.000
5.70	16,323	3621.70	0.00	---	---	---	---	---	---	---	---	---	0.000
5.80	16,670	3621.80	0.00	---	---	---	---	---	---	---	---	---	0.000
5.90	17,017	3621.90	0.00	---	---	---	---	---	---	---	---	---	0.000
6.00	17,363	3622.00	0.00	---	---	---	---	---	---	---	---	---	0.000
6.10	17,697	3622.10	0.05 ic	---	---	---	---	---	---	---	---	---	0.053
6.20	18,031	3622.20	0.21 ic	---	---	---	---	---	---	---	---	---	0.207
6.30	18,364	3622.30	0.46 ic	---	---	---	---	---	---	---	---	---	0.457
6.40	18,698	3622.40	0.79 ic	---	---	---	---	---	---	---	---	---	0.789
6.50	19,032	3622.50	1.20 ic	---	---	---	---	---	---	---	---	---	1.201
6.60	19,366	3622.60	1.68 ic	---	---	---	---	---	---	---	---	---	1.679
6.70	19,699	3622.70	2.22 ic	---	---	---	---	---	---	---	---	---	2.219
6.80	20,033	3622.80	2.80 ic	---	---	---	---	---	---	---	---	---	2.802
6.90	20,367	3622.90	3.42 ic	---	---	---	---	---	---	---	---	---	3.421
7.00	20,701	3623.00	4.05 ic	---	---	---	---	---	---	---	---	---	4.053
7.10	21,006	3623.10	4.69 ic	---	---	---	---	---	---	---	---	---	4.694
7.20	21,312	3623.20	5.31 ic	---	---	---	---	---	---	---	---	---	5.312
7.30	21,618	3623.30	5.88 ic	---	---	---	---	---	---	---	---	---	5.881
7.40	21,924	3623.40	6.34 ic	---	---	---	---	---	---	---	---	---	6.338
7.50	22,229	3623.50	6.40 oc	---	---	---	---	---	---	---	---	---	6.403
7.60	22,535	3623.60	6.63 oc	---	---	---	---	---	---	---	---	---	6.631
7.70	22,841	3623.70	6.85 oc	---	---	---	---	---	---	---	---	---	6.851
7.80	23,147	3623.80	7.06 oc	---	---	---	---	---	---	---	---	---	7.064
7.90	23,453	3623.90	7.27 oc	---	---	---	---	---	---	---	---	---	7.271
8.00	23,758	3624.00	7.47 oc	---	---	---	---	---	---	---	---	---	7.470
8.10	24,003	3624.10	7.67 oc	---	---	---	---	---	---	---	---	---	7.666
8.20	24,248	3624.20	7.86 oc	---	---	---	---	---	---	---	---	---	7.857
8.30	24,492	3624.30	8.04 oc	---	---	---	---	---	---	---	---	---	8.044
8.40	24,737	3624.40	8.23 oc	---	---	---	---	---	---	---	---	---	8.226
8.50	24,981	3624.50	8.40 oc	---	---	---	---	---	---	---	---	---	8.404
8.60	25,226	3624.60	8.58 oc	---	---	---	---	---	---	---	---	---	8.579
8.70	25,471	3624.70	8.75 oc	---	---	---	---	---	---	---	---	---	8.750
8.80	25,715	3624.80	8.92 oc	---	---	---	---	---	---	---	---	---	8.918
8.90	25,960	3624.90	9.08 oc	---	---	---	---	---	---	---	---	---	9.083
9.00	26,204	3625.00	9.24 oc	---	---	---	---	---	---	---	---	---	9.243
9.10	26,363	3625.10	9.40 oc	---	---	---	---	---	---	---	---	---	9.402
9.20	26,521	3625.20	9.56 oc	---	---	---	---	---	---	---	---	---	9.558
9.30	26,680	3625.30	9.71 oc	---	---	---	---	---	---	---	---	---	9.712
9.40	26,838	3625.40	9.86 oc	---	---	---	---	---	---	---	---	---	9.864
9.50	26,996	3625.50	10.01 oc	---	---	---	---	---	---	---	---	---	10.01
9.60	27,155	3625.60	10.16 oc	---	---	---	---	---	---	---	---	---	10.16
9.70	27,313	3625.70	10.31 oc	---	---	---	---	---	---	---	---	---	10.31
9.80	27,472	3625.80	10.45 oc	---	---	---	---	---	---	---	---	---	10.45
9.90	27,630	3625.90	10.59 oc	---	---	---	---	---	---	---	---	---	10.59
10.00	27,789	3626.00	10.73 oc	---	---	---	---	---	---	---	---	---	10.73

...End

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
2	Manual	0.000	5	n/a	0	-----	-----	-----	AREA A 10-YEAR
3	Manual	2.020	5	970	9,630	-----	-----	-----	AREA A 100-YEAR
5	Manual	0.000	5	n/a	0	-----	-----	-----	AREA B 10-YEAR
6	Manual	7.090	5	970	40,965	-----	-----	-----	AREA B 100-YEAR
8	Manual	0.000	5	n/a	0	-----	-----	-----	AREA C 10-YEAR
9	Manual	16.22	5	975	103,722	-----	-----	-----	AREA C 100-YEAR
11	Reservoir	0.000	5	n/a	0	2	3625.00	0.000	AREA A 10-YEAR MIT
12	Reservoir	1.170	5	975	7,942	3	3626.32	2,399	AREA A 10-YEAR MIT
14	Reservoir	0.000	5	n/a	0	5	3613.50	0.000	AREA B 10-YEAR MIT
15	Reservoir	4.366	5	975	30,860	6	3623.04	12,283	AREA B 100-YEAR MIT
17	Reservoir	0.000	5	n/a	0	8	3616.00	0.000	AREA C 10-YEAR MIT
18	Reservoir	8.793	5	980	86,352	9	3624.92	25,532	AREA C 100-YEAR MIT
CG BASINS.gpw					Return Period: 100 Year			Thursday, 04 / 2 / 2020	

Hydrograph Report

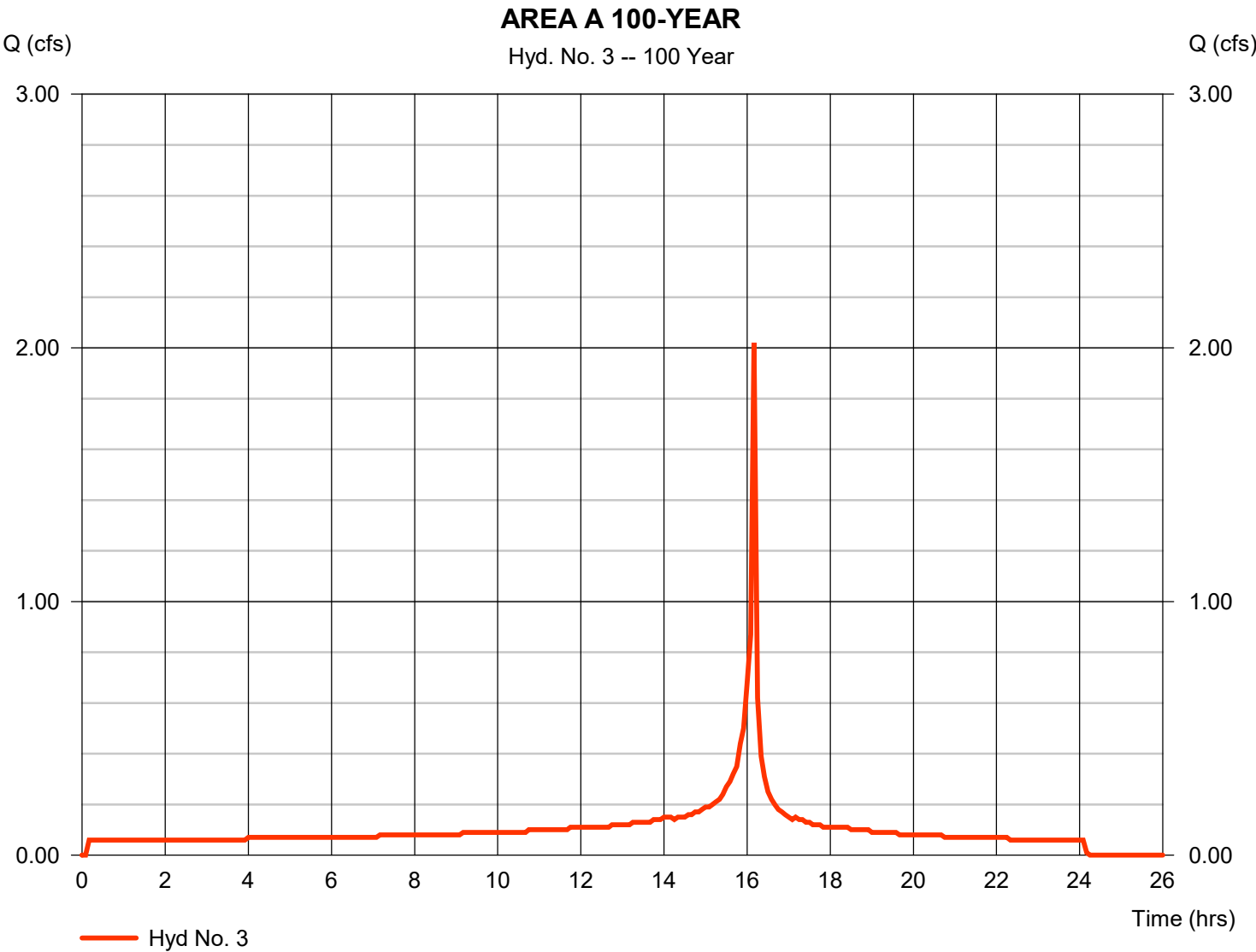
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

Thursday, 04 / 2 / 2020

Hyd. No. 3

AREA A 100-YEAR

Hydrograph type	= Manual	Peak discharge	= 2.020 cfs
Storm frequency	= 100 yrs	Time to peak	= 16.17 hrs
Time interval	= 5 min	Hyd. volume	= 9,630 cuft



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

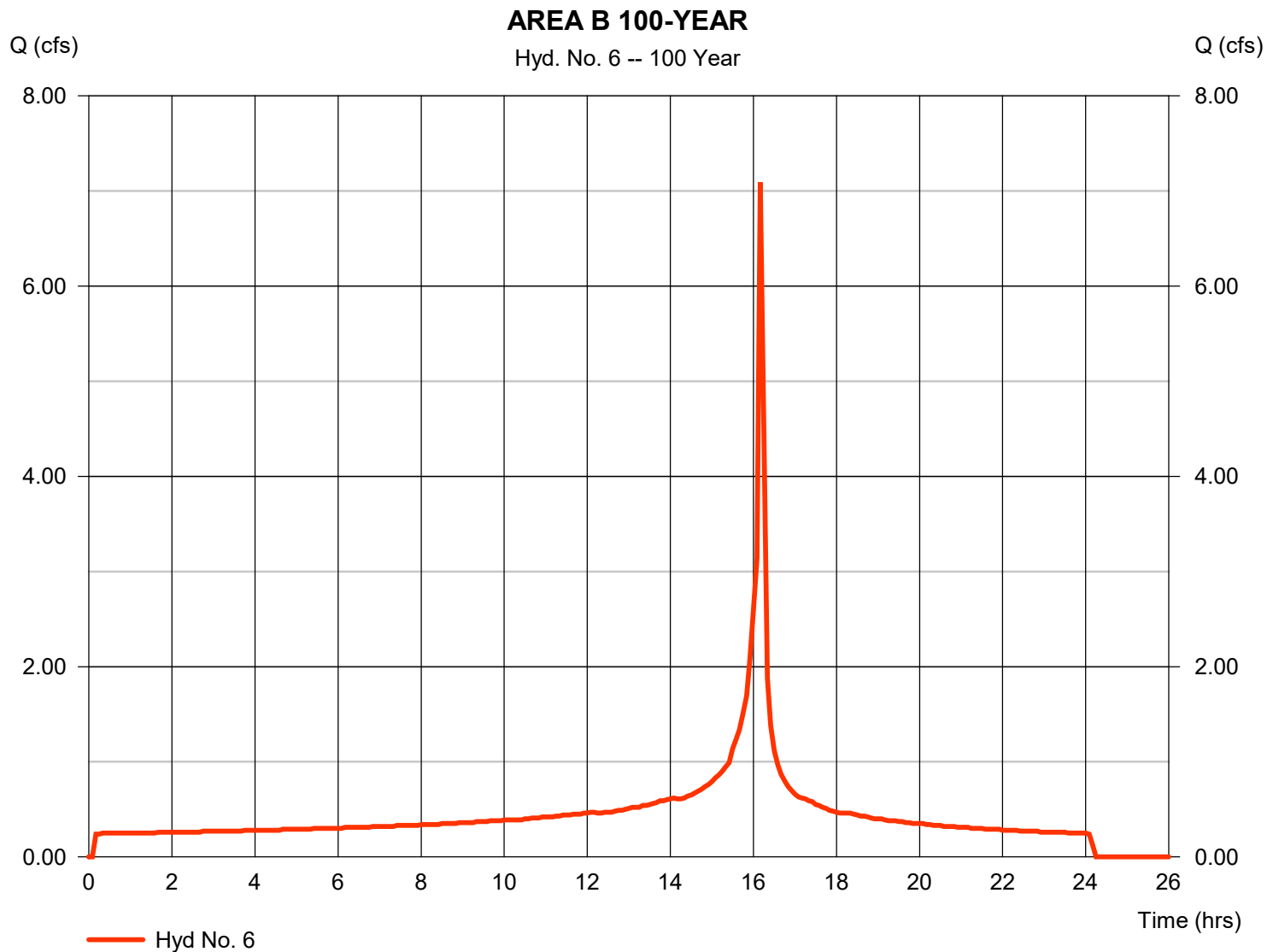
Thursday, 04 / 2 / 2020

Hyd. No. 6

AREA B 100-YEAR

Hydrograph type = Manual
Storm frequency = 100 yrs
Time interval = 5 min

Peak discharge = 7.090 cfs
Time to peak = 16.17 hrs
Hyd. volume = 40,965 cuft



Hydrograph Report

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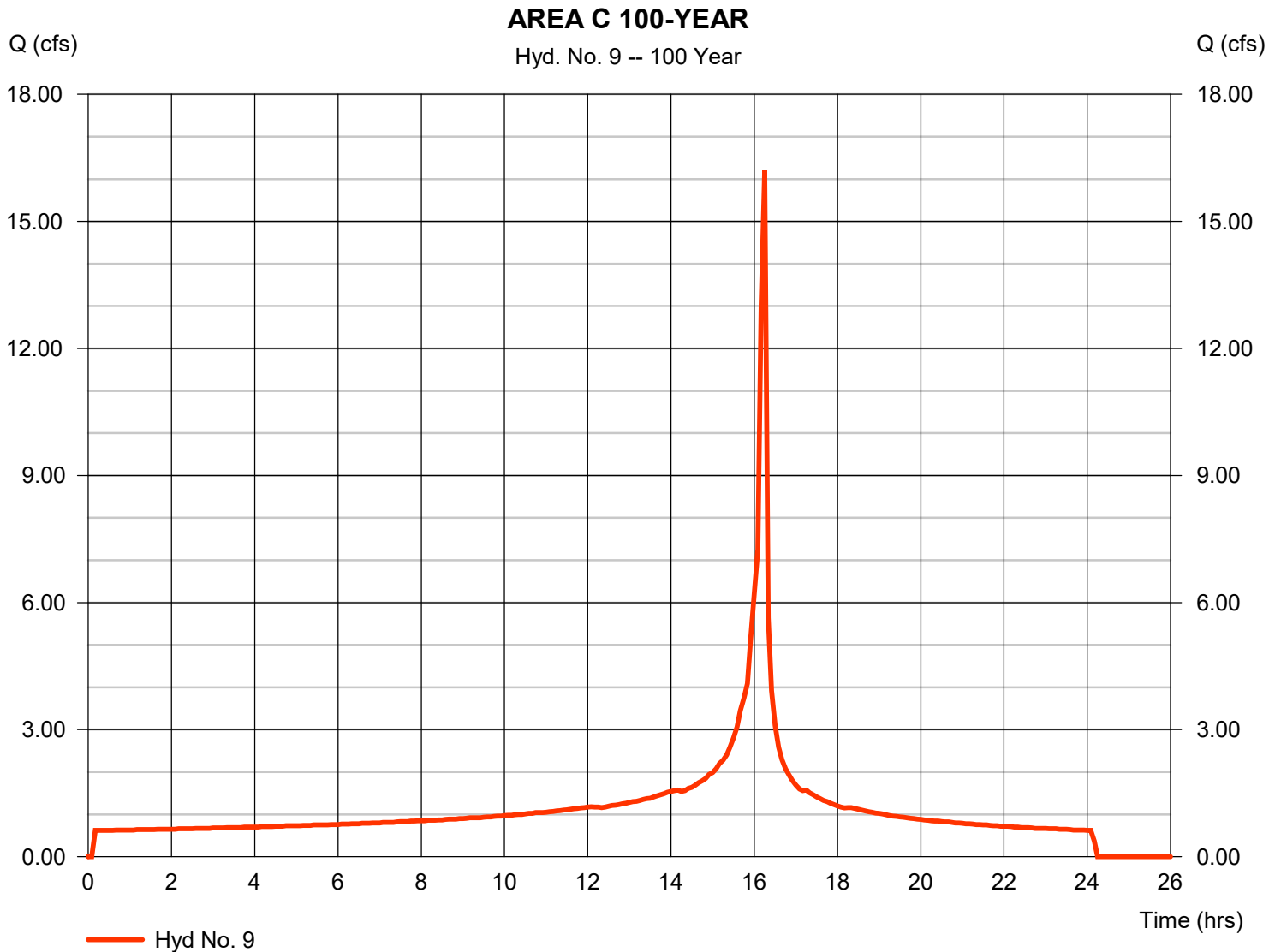
Thursday, 04 / 2 / 2020

Hyd. No. 9

AREA C 100-YEAR

Hydrograph type = Manual
Storm frequency = 100 yrs
Time interval = 5 min

Peak discharge = 16.22 cfs
Time to peak = 16.25 hrs
Hyd. volume = 103,722 cuft



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

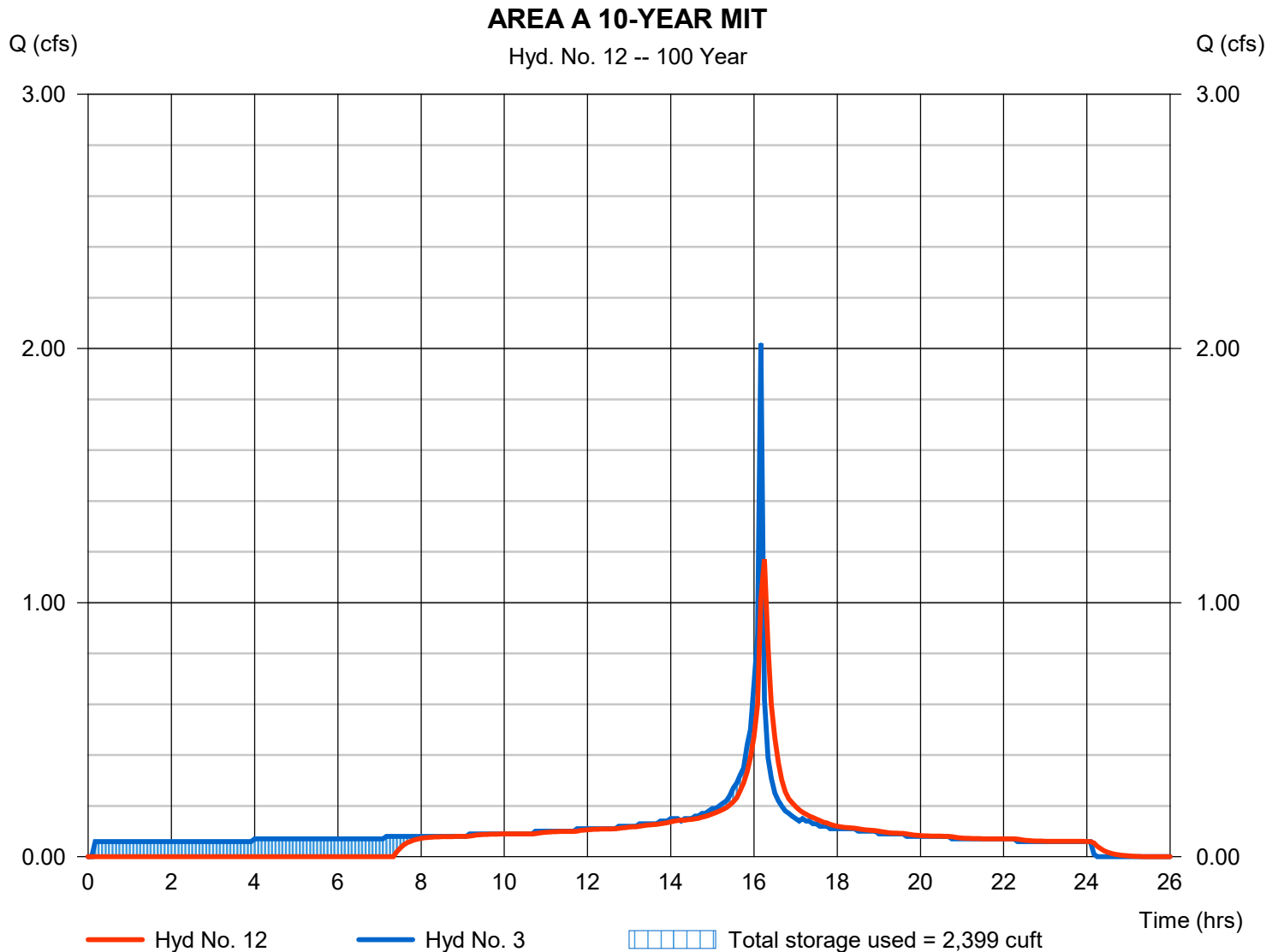
Thursday, 04 / 2 / 2020

Hyd. No. 12

AREA A 10-YEAR MIT

Hydrograph type	= Reservoir	Peak discharge	= 1.170 cfs
Storm frequency	= 100 yrs	Time to peak	= 16.25 hrs
Time interval	= 5 min	Hyd. volume	= 7,942 cuft
Inflow hyd. No.	= 3 - AREA A 100-YEAR	Max. Elevation	= 3626.32 ft
Reservoir name	= POND A	Max. Storage	= 2,399 cuft

Storage Indication method used.



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

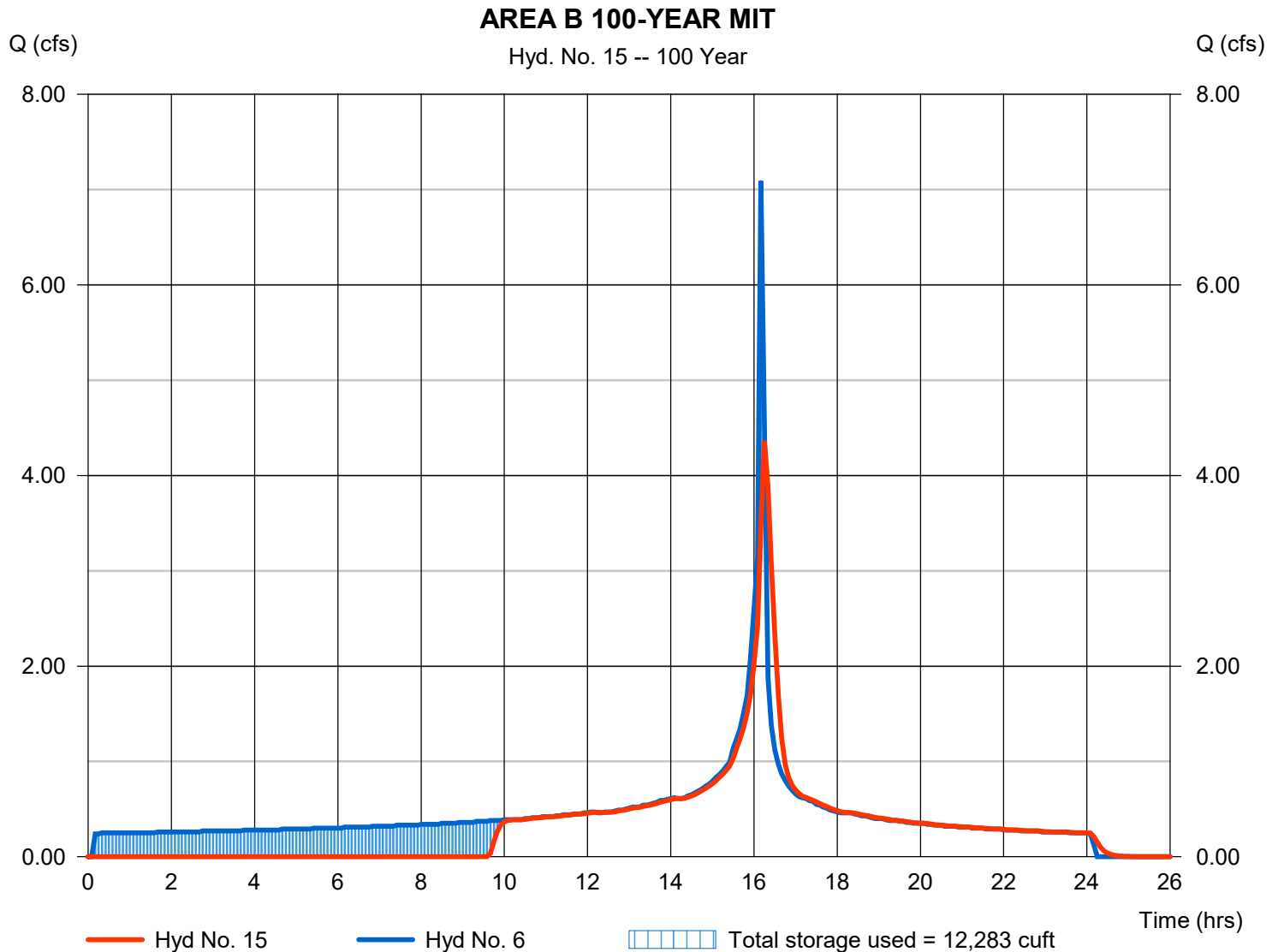
Thursday, 04 / 2 / 2020

Hyd. No. 15

AREA B 100-YEAR MIT

Hydrograph type	= Reservoir	Peak discharge	= 4.366 cfs
Storm frequency	= 100 yrs	Time to peak	= 16.25 hrs
Time interval	= 5 min	Hyd. volume	= 30,860 cuft
Inflow hyd. No.	= 6 - AREA B 100-YEAR	Max. Elevation	= 3623.04 ft
Reservoir name	= POND B	Max. Storage	= 12,283 cuft

Storage Indication method used.



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5

Thursday, 04 / 2 / 2020

Hyd. No. 18

AREA C 100-YEAR MIT

Hydrograph type	= Reservoir	Peak discharge	= 8.793 cfs
Storm frequency	= 100 yrs	Time to peak	= 16.33 hrs
Time interval	= 5 min	Hyd. volume	= 86,352 cuft
Inflow hyd. No.	= 9 - AREA C 100-YEAR	Max. Elevation	= 3624.92 ft
Reservoir name	= POND C	Max. Storage	= 25,532 cuft

Storage Indication method used.

